Cement MILL SECTION of

Concrete

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Silo Storage at New Sandusky Plant

By A. J. Lindquist
Macdonald Engineering Co.

The stockhouse and packing house at the Sandusky Cement Company's new plant located at Silica, Ohio, about 16 miles northwest of Toledo, have just recently been completed by the Macdonald Engineering Co., Chicago. This particular part of the plant contains a number of interesting features, the silo bins having been built by the sliding form method.

The stockhouse or cement storage silos consists of 8 bins 33 ft. 0 in. inside diameter x 80 ft. 0 in. high with side pocket and interspace bins, the storage capacity of which is approximately 170,000 bbls. of cement.

The ground or site of these storage bins was not firm so that it was necessary to go to rock which was in places 20 ft. below the surface, so that walls of concrete were made which rest on the rock and support the building. The basement floor is composed of a light concrete slab which is on a fill. The basement is all open, with windows on side walls, which afford plenty of ventilation. The screw conveyors which empty the bins and carry the cement to the packing house are set flush with the basement floor, and the trough or conveyor box is made up of concrete sides and bottom. Having the conveyors set flush in the floor saves about 2 ft. in the height of the basement, which in this case is only 6 ft. 6 in. high and affords plenty of space for spouting, etc.

All of the foundation walls up to and including the deck slab, on which the bins set, were formed with stationary forms.

Sliding Forms Used

The bins were made with sliding forms consisting of forms 3 ft. 6 in. in height outlining the inside and outside of all walls. This complete section is raised by means of jacks spaced at intervals equally distant, if possible, and these jacks climb up 1⅛-in. jack rods which stay in the center of the wall and act as reinforcing when the bins are finished. Concrete is poured into these forms continuously day and night. This keeps the concrete walls from having any lines of cleavage and constitutes a monolithic wall that might be called a superconstruction.

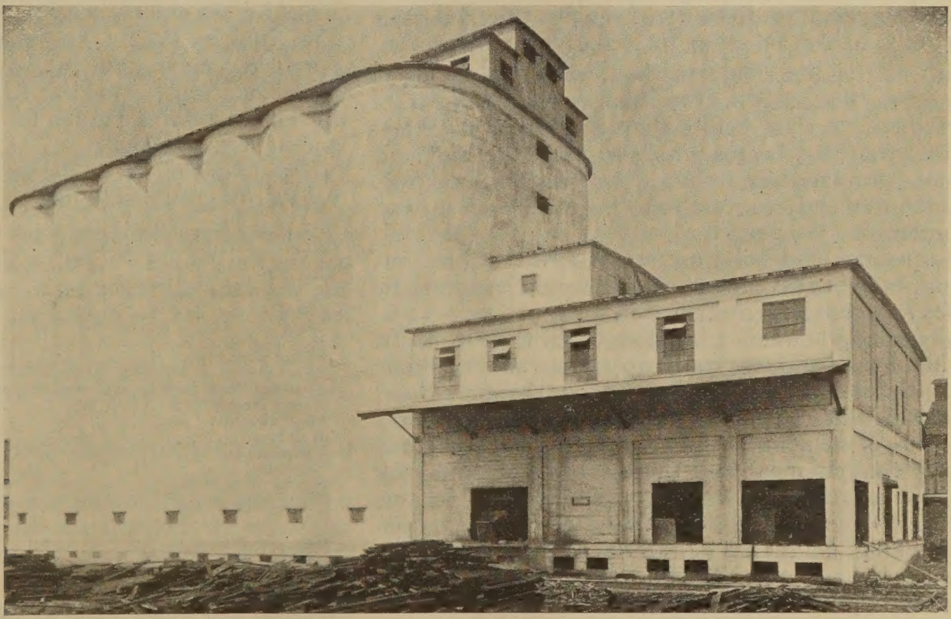
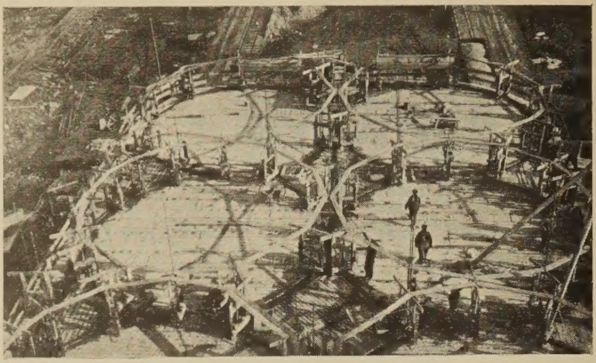
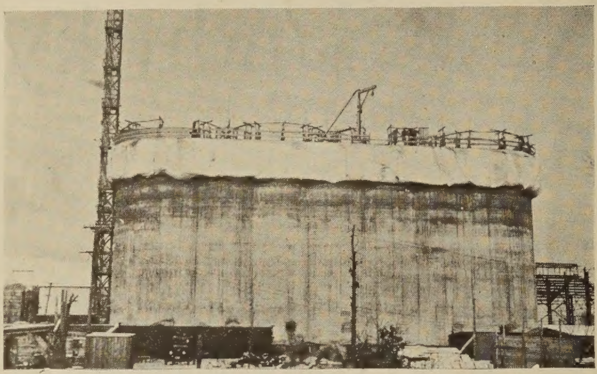


Fig. 1—Silo Storage, Capacity 170,000 bbls. Cement at the Plant of the Sandusky Cement Co., Silica, Ohio





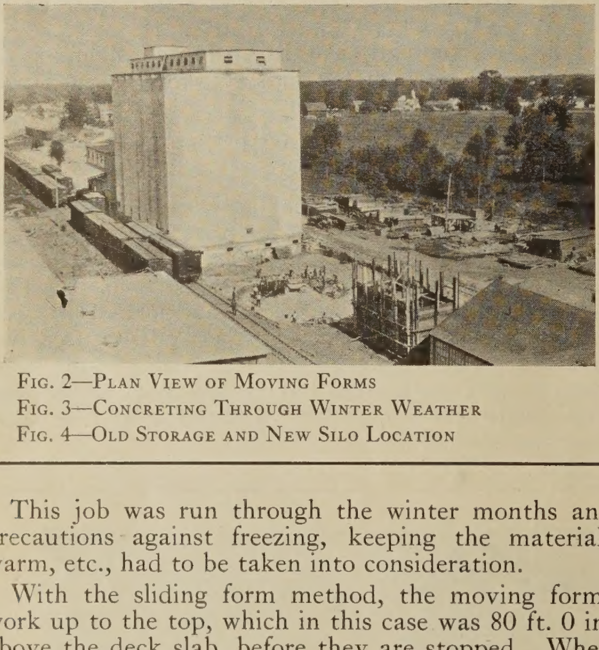


Fig. 2—Plan View of Moving Forms
Fig. 3—Concreting Through Winter Weather
Fig. 4—Old Storage and New Silo Location

This job was run through the winter months and precautions against freezing, keeping the materials warm, etc., had to be taken into consideration.

With the sliding form method, the moving forms work up to the top, which in this case was 80 ft. 0 in. above the deck slab, before they are stopped. When at the top steel I-beams which support the roof and monitor are placed and then the roof slab is poured. After the roof slab is set, monitor forms are set up and the monitor is poured.

All openings and bolts are set in forms before concrete is poured to save labor, such as would be necessary if holes had to be cut or drilled in set concrete.

The packing house is a building 65 ft. wide by 73 ft. long having a basement and two stories above. Four 4-tube Bates Packers are located on the first floor, above which are steel hoppers holding approximately 250 bbls. of cement each. A freight elevator runs between the basement and the second floor, and sack storage, sack cleaning, etc. are accomplished in this building. The doors and sash are of steel construction. The packing house was all formed with stationary forms as moving forms would not be economical in this particular type of construction.

Cement engineers throughout the country are very rapidly realizing the advantages afforded by deep bin storage, and are adopting this method; in fact most of the new plants being built are including storage of deep bin type, and a good many old plants are changing their systems. The Macdonald company in the past 15 years has built cement storage houses of the deep bin type having a combined capacity of more than 4,000,000 bbls., being the pioneers in this method of constructing cement storage buildings.

A second storage unit is just being completed at the Silica plant, consisting of six 33-ft. bins with interspaces, making the total cement storage capacity of the plant 290,000 bbls.

Character of Lime Depends Upon Parent Limestone

It is undoubtedly true that the character of lime depends largely on the nature of the parent limestone, states Oliver Bowles, mineral technologist of the Department of the Interior, in Serial 2479, just issued by the Bureau of Mines. A high-calcium lime cannot be manufactured from a dolomite, nor can a pure lime result from the calcination of an impure raw material. However, in the process of turning limestone into lime man is not entirely helpless in his control of quality. Even though a deposit is variable in character, a single lime product of uniform quality may be produced by judicious quarrying. A single grade of product may not always be desired, the producer may wish to supply the needs of a variety of users each demanding a different grade or quality of lime. Such a series of graded products may be produced in part at least by modifying the quarry method. Thus, by changes in quarry practice a single product or a variety of products may be made.

Gypsum Mined in 1922 Shows Increase

According to a statement issued by the Department of the Interior, compiled from statistics collected by the Geological Survey, the demand for most of the gypsum products was greater in 1922 than in 1921. During the year 3,779,949 tons of gypsum was mined, an increase of 24% over the output in 1921. The sales of agricultural gypsum decreased from 104,966 tons, valued at $490,902, in 1921, to 101,904 tons, valued at $387,203, in 1922. The sales of gypsum for use in portland cement, paint, and other compounds amounted to 668,821 tons, valued at $2,056,143, an increase over the corresponding figures for 1921 of 24% in quantity and of 16% in value.

The following table shows by uses the quantity and values of gypsum sold during 1922.

Gypsum Produced and Sold in the United States in 1922, by Uses

	Short tons	Value
Calcined:		
Stucco	396,990	$2,813,561
Neat plaster	1,333,261	12,126,811
Sanded plaster	80,455	1,165,771
Mixed plaster	(a) 218,650	1,914,572
Plaster of Paris, molding, casting plaster, etc.	(b) 126,288	1,198,819
Keenes cement	21,991	324,316
Plaster board	42,088	945,171
Wall board	120,591	4,500,725
Partition tile	68,338	915,449
Roof tile	(c)	(c)
Special tile or blocks	44,834	368,068
Other purposes	37,779	644,542
	2,491,265	26,917,805
Crude	770,725	2,443,346
	....	29,361,151

(a) Includes small quantity of wood fiber plaster. (b) Includes dental plaster and plaster sold to plate-glass works. (c) Included under "Other purposes."

The Setting of Portland Cement

By W. Laurence Gadd

The investigation of methods for the regulation of setting time and the causes of changes in the setting time of portland cement, has reached such a stage as in the opinion of the Council to justify the summary of results with certain conclusions being presented to members of the Association. It is realized that there is still room for further research on this subject and the Council hopes at some future time to return to the investigation with the view to the discovery of improvements in methods of regulating setting and of means of preventing changes in setting time of cement. Work is now proceeding upon the action of colloids and fatty acids on the setting and other properties of cement.

Strictly speaking, cement cannot be said to possess a definite setting time as the process is a continuous one and probably prolonged into the condition of hardening. In practice, however, it is convenient to fix an arbitrary "setting point," i. e., the stiffening of the pasty mass, and the time occupied in reaching this point from the moment of mixing the cement with water, is the setting time, in which sense the term is employed in the following description of investigation. This time of set is influenced by various factors, some of which are well known and understood, such as: temperature, proportion of water employed, aeration, composition of the cement, addition soluble salts, fine grinding.

Researches were undertaken by the British Portland Cement Research Association to discover the cause of change in setting time which occasionally occurs in storage or in transit; and also to test the correctness of a theory, that these changes are brought about purely by the absorption of moisture from the atmosphere; or its displacement by equivalent molecules of carbon dioxide, derived from the same source. Researches were also carried out to determine the effect on setting time of storage out of contact with atmospheric air; of exposure of the cement to gases; of addition of salts; of the action of the carbonates; action of sulfates; additions of plaster; action of chlorides; effect of nitrates; hydroxides; borax; action of water of crystallization.

The following is a summary of the results obtained:

(1) Storage of cement out of contact with atmospheric air.

Six different samples of commercial cements, and one sample of pure cement (prepared from rotary clinker without any addition of water, steam or gypsum) when kept in sealed bottles for 4 and 6 months, retained their original character of setting time. This was unaffected by fairly wide fluctuations of temperature, and was also independent of light or darkness, or the presence or absence of added gypsum.

(2) Exposure of the cements to gases.

(a) Pure dry air, oxygen and ozone had no effect on the setting time.

(b) Moist air, oxygen and ozone retarded the set of all cements.

(c) Dry carbon dioxide accelerated the setting time.

(d) Moist carbon dioxide accelerated the set enormously, the character of the cements being entirely changed.

The above results were independent of the presence or absence of added gypsum.

(e) Ordinary unpurified air had an uncertain effect on setting time. Three cements were quickened to a more or less degree; two were hardly affected; and one was somewhat slowed. In each case the effect on setting time could be traced to the relative percentages of carbon dioxide and water absorbed or lost.

(f) Exposure of the same sample of cement first to moist air (free from CO_2) and afterwards to carbon dioxide, resulted in the setting time being first retarded and then accelerated.

(3) Effect of addition of salts.

(a) The carbonates of soda, potash and ammonia accelerated the setting time, the first two very strongly.

(b) Sulfates, in general, accelerated the set. Except gypsum and small proportions of plaster of paris, very few sulfates had a retarding effect and these all contained water of crystallization.

(c) Chlorides also, as a rule, accelerated setting time, but the effect was, generally speaking, not very pronounced.

(d) Nitrates, generally, had no very definite effect.

(e) The hydroxides employed, including slaked lime, all accelerated the set of cements to a greater or less degree.

(f) Borax had a similar effect, especially the crystallized salt.

(4) Effect of crystallized water in salts.

(a) Anhydrous sodium carbonate, whether dissolved in the gauging water, or ground with the cement beforehand, had a strong accelerating effect on setting time.

(b) Crystallized sodium carbonate, dissolved in the gauging water, had a similar action.

(c) Crystallized sodium carbonate, ground with the cement 24 hours beforehand, had considerably less action in quickening the setting time.

(d) Anhydrous sodium carbonate ground with the cement 5 to 9 weeks before testing, greatly accelerated the set.

(e) Crystallized sodium carbonate, ground with the cement 5 to 9 weeks before gauging, but little affected the setting of the cement, its slow-setting character being retained.

(f) Quick-setting (ignited) cement, in contact for 6 hours with crystallized sodium sulfate or crystallized magnesium nitrate under pressure, became very slow-setting.

(g) Cement already slow-setting, was less affected by crystallized water expelled by pressure, but nevertheless absorbed a proportion of the crystallized water and became slower.

Conclusions

The conclusions drawn from the results of the experiments herein detailed are:

(1) The setting time of cement does not change of itself, even after prolonged storage out of contact with air. There is, therefore, no apparent spontaneous alteration in chemical composition or physical structure.

(2) The time of set of cement appears to depend upon the proportion of combined water present in hydrated calcium aluminate or silicate, which tends to form a protective sheath or coating round the particles of cement and resists or delays the penetration of water to the active core. The greater the quantity of water absorbed by, or combined with, the cement, the more impervious is the protective sheath or film and the slower is the time of set. On the other hand, the setting is accelerated by any influence which abstracts water from the cement, or which attacks and destroys or modifies the sheath of hydrated material, thereby enabling the gauging water to penetrate more quickly to the active core of the particle.

(3) Changes of setting time (as when cement is

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[1] Abstracted from Pamphlet No. 1, The British Portland Cement Research Association.

stored) are brought about only by outside influences, e. g., carbon dioxide and water vapor or active salts, which abstract water from or act upon the protective sheath of hydrous material coating the grains.

(4) Cement is capable of abstracting water from salts containing water of crystallization with which it lies in contact for some weeks. Such abstracted water hydrates the cement particles and retards the time of set.

(5) Cement in contact with salts containing water of crystallization which have part of such water expelled by pressure, will under these conditions combine with the expelled water and become slower-setting.

(6) The setting time of cement, resulting from the partial hydration of the particles, remains unchanged provided the material is not subjected to outside influences which affect the hydrous film coating the grains.

(7) The reason for the acceleration or retardation of setting time by soluble salts is not sufficiently clear to warrant a definite conclusion being drawn as to whether the action is catalytic or not. In some cases, chemical reaction undoubtedly occurs (e.g., with ammonium salts and ferric sulfate) and it is reasonable to surmise that the action in other cases is also chemical. It does not, however, appear that the alteration in setting time, brought about by the addition of salts, is directly due to the formation of double salts, except perhaps when the double sulfate of lime and alumina is formed. In several instances the effect on setting time appears to be clearly dependent upon the presence of crystallized water in the salt used.

(8) The results of this research lead to the conclusion that the use of gypsum as a retarder is sometimes uncertain and irregular in its effects. On the other hand, the regulation of setting time by hydration, through the medium of steam or water, appears to be more permanent.

In practice, the regulation of setting time by hydration alone is not generally adopted by manufacturers and some further investigation as to the relative advantages of gypsum and water (or steam) as hydrating agents is desirable.

Lime Industry in China

By M. H. Chou
Shanghai, China

It is a very hard matter to trace to the time when lime was first made in China or used for building purposes or as fertilizer. It is understood that the Chinese used it at least several thousand years ago.

Occurence

Limestone occurs very abundantly in China. We can find it in every province. However there is quite a bit of dolomitic limestones as reported in the record of the Geological Survey.

Locality	SiO_2	Al_2O_3	CaO	MgO	CO_2
Han-chin, (Mukden)	.393	1.754	37.893	7.676	49.890
Ka Ban, Sample 1	4.80	2.30	18.52	24.51	42.95
Sample 2	1.60	.47	36.94	8.27	47.76
Sample 3	10.44	.99	28.49	15.68	41.58
Sample 4	6.893	1.185	29.993	28.203	40.609
Sample 5	9.74	1.50	26.57	17.25	43.62
Sample 6	9.39	.66	32.48	8.76	45.77
Nee Hsin, Sample 1	.13	.18	42.47	11.68	
Sample 2	.10	.25	50.24	6.10	
Sample 3	1.18	.32	46.63	8.34	
Wusih, Sample 1	5.39	6.13	41.25	7.78	39.24
Chao Hsin	15.18	7.13	39.85	5.14	30.80

The analysis of almost pure limestone is as follows:

Locality	SiO_2	Fe_2O_3 & Al_2O_3	CaO	MgO	CO_2+H_2O
Wusih, Sample 1	.39	.19	54.58	.71	43.74
Sample 2	Trace	.20	55.51	.53	43.61
Sample 3	.10	.17	54.66	.93	43.68
Sample 4	2.95	1.10	52.30	.51	42.43
Sample 5	4.02	2.25	50.47	.99	41.31
Sample 6	1.83	.71	52.05	1.43	42.44
Nee Hsin, Sample 1	.41	.10	53.18	.90	
Sample 2	.49	.12	52.94	2.31	
Tung Ting, Sample 1	.05	.14	55.38	.43	
Sample 2	.43	.15	53.51	2.11	
Sample 3	.29	.23	54.87	.82	
Sample 4	.05	.08	55.50	Trace	
Kan Tze, Sample 1	.05	.11	55.04	.13	43.70
Sample 2	.42	.32	54.18	.22	43.38
Sample 3	.15	.20	54.96	.18	43.75
Ching Kiang					
Sample 1	1.83	1.10	53.50	.74	42.76
Sample 2	1.10	.27	54.75	.64	43.21
Sample 3	1.79	.49	53.87	.53	43.02
Lungtah, Sample 1	.36	.30	55.44	.43	43.75
Sample 2	.09	.11	55.43	.16	
Tong Shan	2.22	.42	52.46	.30	42.80
Wuchow	.06	.09	55.94	.18	43.75
Unknown, Sample 1	.22	.18	55.91	.32	
Sample 2	3.38	1.50	53.61	.62	
Sample 3	3.57	.39	51.09	2.98	
Sample 4	.99	.27	54.63	1.19	

Manufacture

The process of manufacture of lime from limestone is entirely in the hands of farmers or those laborers who are employed by some companies for manufacturing lime. First the limestone quarry is broken by hand chisel or by gunpowder. Big lumps of limestone are piled up to form a kiln in which wood and straw are burned until most of the carbon dioxide is driven away.

Another process of manufacture is very interesting. First of all, coal dust is moistened and pressed into cakes together with mud. These coal cakes and limestone lumps are piled together one upon another. Then the whole pile is surrounded by some fire-resisting claystone. Fire is started from a small opening at the top of the pile. It is allowed to burn for a week. After that the surrounding claystone is taken away and the lime formed is sorted out from the pile. It takes an enormous amount of labor. This process is quite feasible in China because of unparalleled cheapness of labor existing in China.

Uses

The price of lime in Shanghai is 2 Mex dollars (equivalent to 1.50 gold) per 250 lbs. It is extensively used for building purposes. The farmer uses it for fertilizer on the farm. The paper manufacturer uses it to disintegrate the bamboo. It is used as flux for making pig iron in many iron works in China. The wine maker cures the sourness of wine by adding lime to it and filtering. The pharmacist uses it for dehydrating purpose. The cement maker uses it in making cement.

However, the use of lime can be greatly extended as fertilizer by the farmer, if there is a new modern grinding mill to reduce lime into powder. As there is practically no work done either by the government or by private interests to test the acidity of the farm soil, it is very hard to convince the farmer that he can increase the amount of his crops by means of lime.

Future Outlook

The lime industry in China has not yet been modernized, but it will be in the near future, for there is a great demand for the lime of better quality. It will present a great opportunity to the American manufacturers of lime kilns to introduce themselves into the field of manufacturing activity in China. So far as I know, there is no single concern which is employing lime kilns for the manufacture of lime in China.

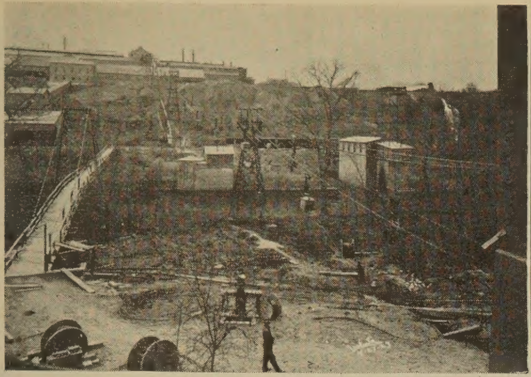


Fig. 1.—Looking at Mill from Quarry Side

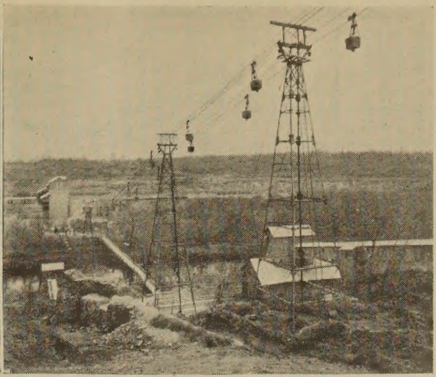


Fig. 2—(Right) Looking at Quarry and Crusher from Mill Side

Moving a Hillside With an Aerial Conveyor

"Over the river and up a hill" an average of 50,000 tons of rock a month is carried by the aerial conveying system at the plant of the Lehigh Portland Cement Co. at Ogelsby, Illinois. The system consists of a series of cables on which buckets travel, each bucket carrying about 950 lbs. of rock. The buckets run on a stationary cable and are pulled by a moving cable operated by electricity.

The main plant of the cement company is located on one side of the Vermillion river, while the deposits of raw materials from which the cement is made are on the other side. The rock from the quarries is crushed in a crushing plant, where it is loaded on the buckets that carry it across the river and up the hill to the main plant—a distance of about 1,200 ft. The cables at the highest point, are 85 ft. from the ground. The dumping of buckets is automatic, and it requires about 15 minutes for a bucket to make a round trip. There are 47 buckets running on the cables and about 50,000 tons of rock are carried in an average month.

Colorado Company Erects Houses for Employes

By E. J. Strock

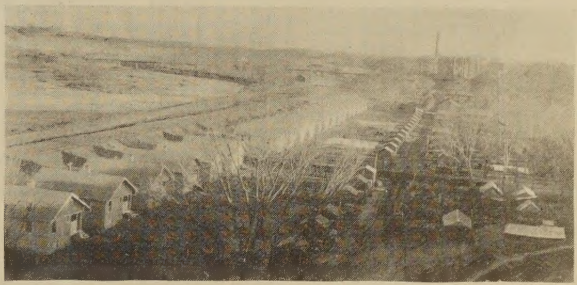
The Colorado Portland Cement Co., has recently completed the construction of 27 cottages, part of them being of the four room type and part having five rooms each, to be occupied by the company's employees. These houses, both types of which are shown in the accompanying illustrations, are all of concrete stucco with pebble-dash finish. Expanded metal lath on studding was used for the outside and wood lath and plaster for the interior finish of the walls. Slate surfaced tar paper shingles were used on the roof.

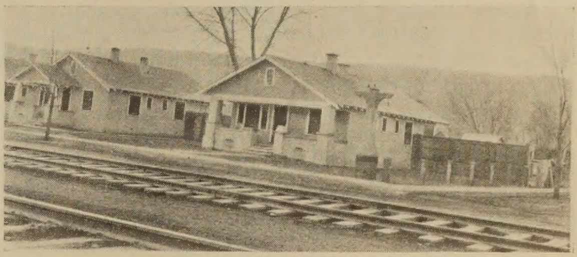
The outside of the houses is painted white. The interior finish in the kitchens and bathrooms is white enamel paint. The five room houses have full plumbing, and kitchen ranges are furnished. The four room houses have water piped to the kitchen sinks and have toilets.

Water and electric lights are furnished all company houses free of charge as is also the electric current for cooking where desired. Probably about the most convenient feature about these houses is the arrangement in the kitchens and the conveniences as arranged for the housewife cannot be beaten.

Each house has a coal shed of wood and an ash box of concrete. From the front porch to the main sidewalk there are concrete walks for each house and also walks from the front to the rear porch and from the rear porch to the back of the lot. A high lattice fence between the houses shuts off the back yards from the lawns which are provided for in front. The lattice fences and the coal sheds are painted green.

Stucco light poles have been installed in front of the houses and this type of pole will be placed over the entire town doing away with the original arc light poles in use in the older sections.





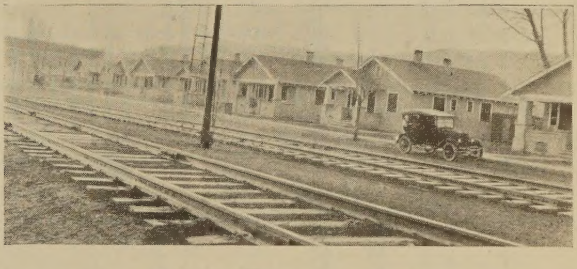


Fig. 1—The 27 New Houses of Colorado Portland Cement Co. and Plant in Background

Fig. 2—Five Room Houses. Note Concrete Light Post

Fig. 3—Another View of 5 Room Houses

The houses were built by the company's own crew of carpenters and were built as strong and rigid as it

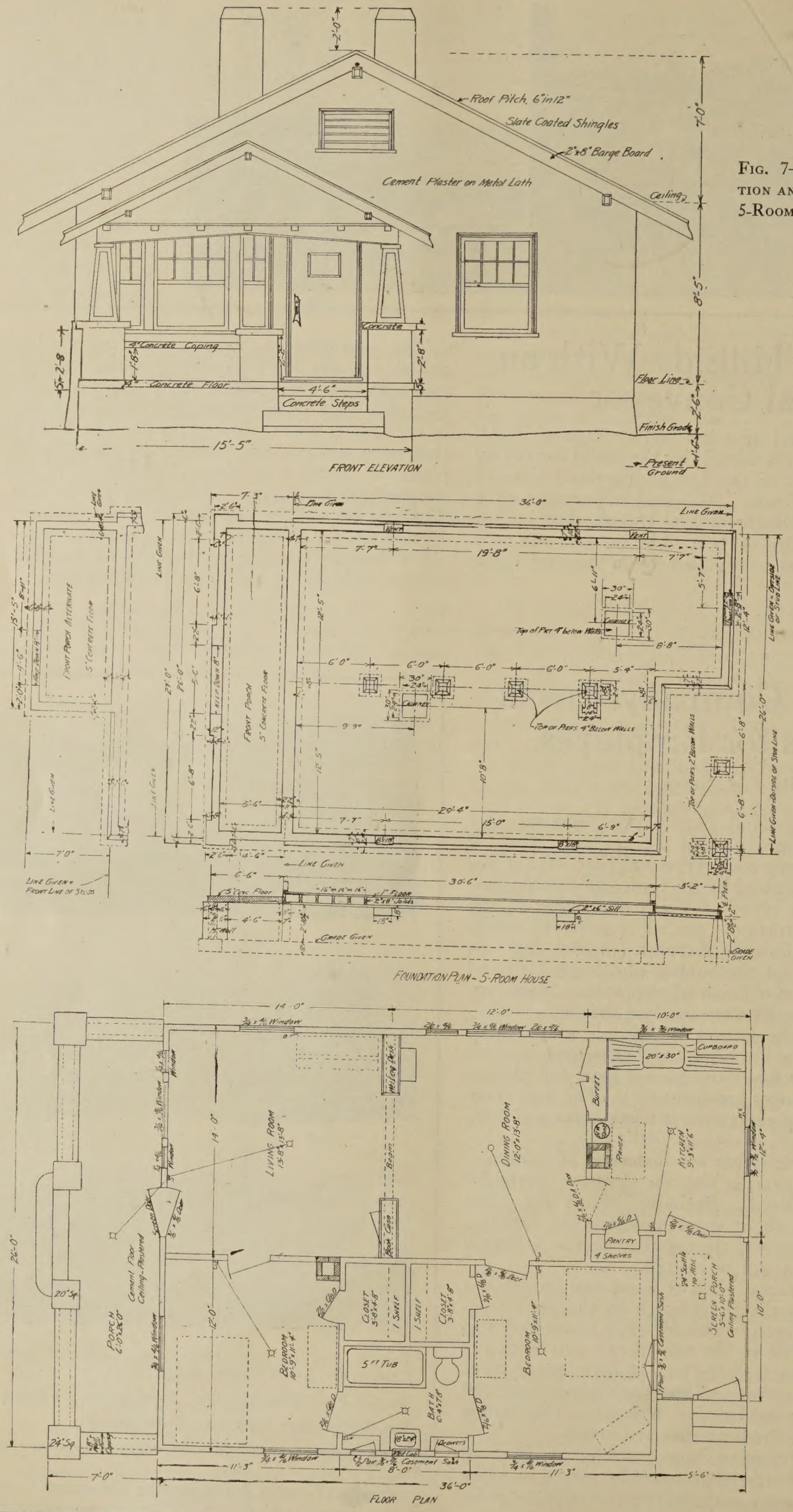
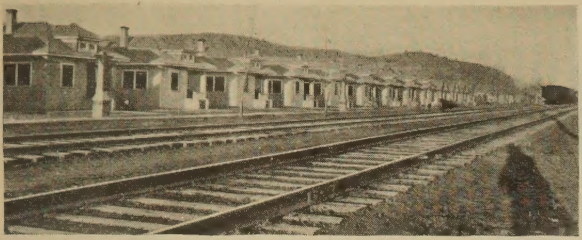
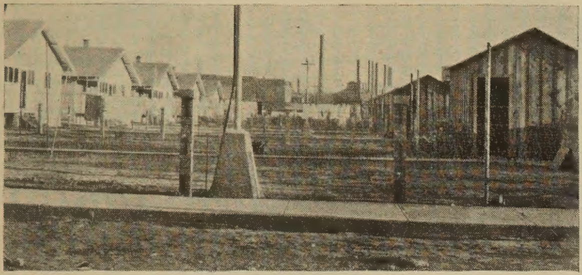


Fig. 7—Front Elevation and Floor Plans 5-Room House





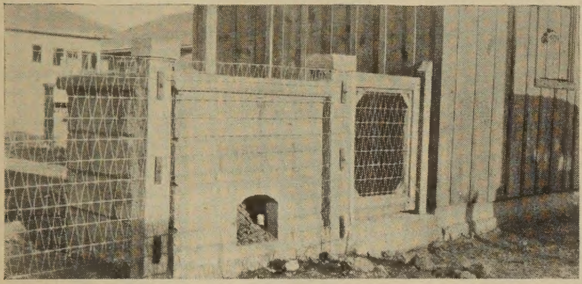


Fig. 4—View of 4 Room Houses

Fig. 5—Back Yard View of New Houses

Fig. 6—Concrete Fence Posts, Bolts Imbedded in Post and Strap Iron Clip Holding Fence Wire. Note Concrete Ash Box

was possible to make them. None of them were built under contract. The flood of 1921 proved the necessity for building the houses on a firm foundation, so each house was built on a concrete wall, not less than 3 ft. high. Porches were constructed of concrete.

Concrete fence posts in the backyards carry a heavy woven wire fence which is held in place by bolts set in the concrete and strap metal clips.

Instead of building garages on the individual lots, large garages were conveniently located, one having been constructed which is 426 ft. long.

Western Cement Rates

The western cement rates case has been reopened by the Interstate Commerce Commission as instances have been brought to its attention where freight rates are being applied via routes that are so extremely circuitous as to make it doubtful that such rates are reasonably compensatory for the service performed. The case was assigned for further hearing on the question of Fourth Section relief on July 16. The attention of the railroads is directed by the Commission to the fact that in order to comply with the requirements of the Fourth Section of the Interstate Commerce Act relief shall not be granted to establish rates that are not reasonably compensatory; it will be necessary to impose a limitation upon the relief which may be granted as a result of this proceding.

Freight on Empty Return Bags

It is probable that the Interstate Commerce Commission will take action in the near future to correct the abnormal condition now existing in certain parts of southwestern territory with regard to railroad rates on empty returned cement bags. In a proceeding instituted pursuant to a complaint made against the Abilene & Southern and other railways by the Oklahoma Portland Cement Co., it was disclosed that the railroads by voluntary action have established interstate rates on returned bags that are approximately one-half of the interstate rates.

Such bags, in less than carload lots, when baled in accordance with the carriers' tariff rules, ordinarily are given the fourth class rating throughout western classification territory, but by exceptions to this classification the railroads provide a rating of one-half of fourth class on bags moving entirely within the state of Texas, or from Shreveport, La., to points in Texas. Similar exceptions also are in force on interstate traffic in Oklahoma, Kansas, Missouri, and Iowa, but no such exceptions apply on interstate traffic except from the Shreveport group to Texas.

The gist of the Oklahoma Portland Cement Company's complaint is that it has to pay the full fourth class rates on empty returned bags from Texas points to its mill at Ada, Okla., which, compared to the rates from and to Texas points, subject the Oklahoma plant, the complaint alleges to great disadvantage in meeting competition in Texas from mills producing cement in that state. The class scale of rates between points in Texas and points in Oklahoma moreover is the same as the class scale between points in Texas.

While the Commission's order in this proceeding must be limited to the immediate situation complained against by the Oklahoma Portland Cement Co., Examiner J. E. Smith stated in a tentative report in the proceeding recently, the railroads probably will be advised to correct their tariffs throughout this territory in such a manner as to remove undue prejudice against interstate traffic.

"It appears that shippers of cement located in Texas, when they do business in Oklahoma and other states, have to bear the full fourth class rates on empty returned cement bags," Examiner Smith's report commented. "This condition should be remedied. What has just been said concerning rates between points in Texas and Oklahoma should also be applied to rates between other states in the same territory when the interstate ratings are lower than the ratings on the same traffic moving interstate."

Rather than reduce the rates on interstate traffic it is probable the railroads that would be affected by the proposed order of the Interstate Commerce Commission will apply the full fourth class rating on interstate traffic on returned bags in the future. It is a matter of indifference to the Commission apparently which rating shall apply, the order suggested by Examiner Smith in the Oklahoma Portland Cement Company's case, requiring only that the railroads remove the disparity.

The Sulphide Corporation (Ltd.) has decided to establish cement works at Cockle Creek, New South Wales. The company will proceed immediately with the construction of the first unit of the plant, which is to be capable of producing 30,000 tons of cement a year, according to *Commerce Reports*. This plant will probably be duplicated later on.

Cement Labels I Have Met—Part 8

By Charles W. Erdell
Bethlehem, Pa.

Final installment of articles dealing with miniature cement labels. The first article appeared in February issue of Concrete.

With the presentation of these seventy-six miniature cement labels, representing cement brands of companies from various quarters of the globe, our somewhat lengthy narrative on this subject comes to a conclusion. A cursory examination of the labels shown on the following page might lead the reader to believe that the trade-marks were not arranged in the best possible order, judging from the fact that they are rather indiscriminately grouped as to countries. However, it should be stated that as these seventy-six were the "odds and ends" remaining to be shown, the grouping had to be arranged to an all-around best advantage, taking into consideration the colors as the principal item. Therefore, in our perusal of the article and examination of the labels herewith reproduced it is hoped that the reader will not become confused on account of the necessity of skipping from one country to another and then, possibly, back again to the starting point.

Trade-Marks in This Issue

The labels shown in this issue represent plants in this and other countries as follows:

United States	12	Spain	2
Canada	3	Wales	1
Mexico	4	Denmark	2
Cuba	1	Norway	2
Uruguay	1	Sweden	12
England	8	Roumania	1
Belgium	19	China	1
Germany	3	Japan	1
France	3	Austria	1
Australia	1		

The author has used every effort to procure all of the latest labels extant. Success was achieved in a number of cases where new trade-marks were just in the making, and a few of the American labels shown were received at the last minute and in time for reproduction. The same occurred with quite a number of labels from across the sea, and it is believed that if the matter had been properly brought to the attention of the foreign manufacturers by the writer, many more would have been submitted in time for the last installment. However, in looking back we can readily appreciate that the best was done under the existing circumstances. One thing that precluded a drive for foreign labels while the articles were being published, was the lack of knowledge as to just when the foreign labels on hand would appear in Concrete.

Unpublished Miniature Labels

There are upwards of 90 miniature trade-marks of the collection which it was found impossible to reproduce, and the reader will understand, from repeated assertions in the past along this line, that this is due to the color scheme of the individual labels. In most cases the colors did not carry enough contrast. On some of the labels the lettering or wording of the brand, etc., was indistinct and this also caused them to be laid aside. It should therefore be appreciated by those interested in their various labels that no trade-mark was omitted until it had been proved that it could not be reproduced and it is sincerely regretted that some of the prominent labels representing both domestic and foreign brands fell in this category.

Following is a list of those labels which have not been reproduced in these articles, but it should be remembered that they are still included in the writer's *Collection of Miniature Cement Labels of the World*, and will be shown in the mounted collection of all the brands in the near future.

United States

Allentown Portland Cement Co., Allentown, Pa., "Swastika" brand.
American Cement Co., Egypt, Pa., "Egypt" brand.
American Cement Co., Egypt, Pa., "Improved Union" brand.
Blanc Stainless Cement Co., Allentown, Pa., "Blanc" brand.
Bronson Portland Cement Co., Bronson, Mich., "Centaur" brand.
Buffalo Cement Co., Buffalo, N. Y., "Buffalo" brand.
Catskill Cement Co., Smith's Landing, N. Y., "Catskill" brand.
Cummings Cement Co., Akron, N. Y., "Roman Hdyr. Asbestic" brand.
Cumberland Hydraulic C. & M. Co., Cumberland, Md., "Cumberland Hydraulic" brand.
Dakota Portland Cement Co., Sioux Falls, S. D., "Dacotah" brand.
Glens Falls Portland Cement Co., Glens Falls, N. Y., "Adirondack" brand.
Iroquois Portland Cement Co., Caledonia, N. Y., "Iroquois" brand.
Indianapolis Portland Cement Co., Indianapolis, Ind., "Indian" brand.
Lawrenceville Cement Co., New York, N. Y., "Beach's Rosendale" brand.
Lupton Portland Cement Co., Lupton, Mich., "Ogemaw" brand.
Maryland Portland Cement Co., Security, Md., "Key" & "S" brands.
New Jersey Portland Cement Co., Perth Amboy, N. J., "Climax" brand.
New York Cement Co., New York, N. Y., "Superior" brand.
Piedmont Portland Cement Co., Portland, Ga., "Piedmont." brand.
Struthers Furnace Co., Struthers, Ohio, "Struthers" brand.
Superior Portland Cement Co., Superior, Wash., "Superior" brand.
Superior Portland Cement Co., Charleston, W. Va., "Superior" brand.
Security Cement & Lime Products Co., Berkeley, W. Va., "Berkeley" brand.
Southern Cement Co., Birmingham, Ala., "Alabama" brand.
Southern Cement Co., Birmingham, Ala., "Magnolia" brand.
South Western Portland Cement Co., Folmina, Ark., "Folmina" brand.
Superior Portland Cement Co., Seattle, Wash., "Superior" brand.
Ridgemont Cement Mfg. Co., Ironville, Va., "Ridgemont Hydraulic" brand.
Ridgemont Cement Mfg. Co., Ironville, Va., "Standard Rosendale" brand.
Wellston Portland Cement Co., Wellston, O., "Niagara" brand.
Wolverine Portland Cement Co., Coldwater, Mich., "Eclipse" brand.
York Portland Cement Co., Portsmouth, Ohio, "Setter" brand.
United Building Material Co., New York, N. Y., "Sterling" brand.
(Manufacturer unknown) "Zenith" brand.
(Manufacturer unknown), "Atlantic Rosendale" brand.
Louisville Cement Co., Louisville, Ky., "Flag" brand.

Canada

Brant Portland Cement Co., Brantford, Ontario, "Indian" brand.
Western Canada Cement & Coal Co., Exshaw, Alberta, "Pure" brand.

Cuba

La Compania Cubana de Portland Cemento, Habana, "El Morro" brand.

Argentine

Compania Argentina de Cemento Portland, Buenos Aires, "San Martin" brand.

China

Green Island Cement Co., Hong Kong., "Emerald" brand.

Spain

Ancienne Societe Desvroise des Ciments Portland, "Desvres" brand.

France

Societe de J. & A. Pavin de La Farge, Viviers, "Three Stars" brand.

England

Isis Portland Cement Co., Cliterhoe, "Isis" brand.
Kaye & Co., Ltd., Southam, Rugby, "Warwickshire Hydraulic" brand.
Jos. Robinson & Co., Greenwich, "J. R. & C." brand.
Jos. Robinson & Co., Greenwich, "Stukalite" brand.
(Manufacturer unknown), "Heraldry" brand.

Sweden

Skanska Cement Aktie Bolaget, Malmo, "Kangaroo" brand.
Skanska Cement Aktie Bolaget, Malmo, "3 Crowns" brand.
Svenska Cement Fors. A. B. Malmo "Red Cross" brand.
Svenska Cement Fors. A. B., Malmo, "Ship" brand.
Svenska Cement Fors., A. B., Malmo, "Flag" brand.
Visby Portland Cement, A. B., Visby, "Lighthouse" brand.
Maltesholms Cement, A. B., Malmo, "Red Cross" brand.
Maltesholms Cement, A. B., Malmo, "Crown" brand.
Olands Cement, A. B., "Bear" brand.
Swedish Cement Selling Association, Malmo, "Power" brand.

Germany

Alsen'sche Portland Cement Fabrik, Itzehoe, "Yellow Label" brand.
Alsen'sche Portland Cement Fabrik, Itzehoe, "Blue Label" brand.
Breitenburger Portland Cement Fabrik, Hamburg, "Atlas" Brand.
Berka Portland Cement Fabrik Berka "Eagle" brand.
Drachenberg Portland Cement Fabrick, Weferlingen, "Dragon" brand.
Lagerdorfer Portland Cement Fabrik, Hamburg, "Eiffel Tower" brand.
Ludwig Roth Portland Cement Fabrik, Karlstadt on Main, "Shield" brand.
Luxembourg Compagnie Generale des Ciments, Luxembourg, "Bee" brand.
Pahlhude Portland Cement Fabrik, Pahlhude, Holstein, "Red Cross" brand.
Wicking'sche Portland Cement & Lime Works, Recklinghausen, "Double Anchor" brand.
Walkenrieder Gipsfabrik, Walkenried am Harz, "Marmorcement" brand.

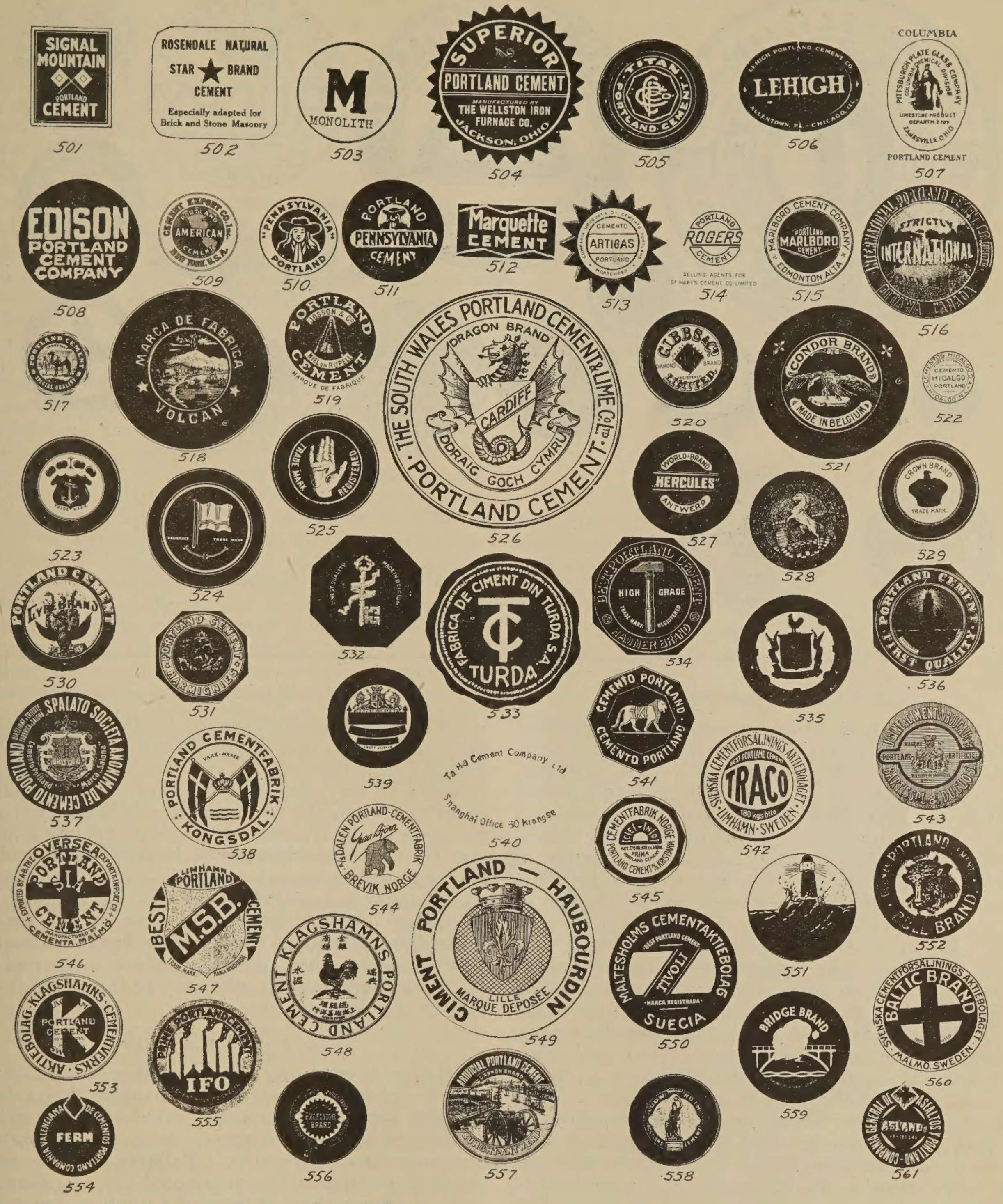

SIGNAL MOUNTAIN PORTLAND CEMENT
501
ROSENDALE NATURAL STAR BRAND CEMENT Especially adapted for Brick and Stone Masonry
502
M MONOLITH
503
SUPERIOR PORTLAND CEMENT MANUFACTURED BY THE WELLSTON IRON FURNACE CO. JACKSON, OHIO
504
TITAN PORTLAND CEMENT
505
LEHIGH PORTLAND CEMENT CO. LEHIGH ALLENTOWN, PA.—CHICAGO, ILL.
506
COLUMBIA PITTSBURGH PLATE GLASS COMPANY COLUMBIA CHEMICAL DIVISION ZANESVILLE OHIO PORTLAND CEMENT
507
EDISON PORTLAND CEMENT COMPANY
508
CEMENT EXPORT CO. INC. PORTLAND AMERICAN CEMENT NEW YORK U.S.A.
509
"PENNSYLVANIA" PORTLAND
510
PORTLAND PENNSYLVANIA CEMENT
511
Marquette CEMENT
512
CEMENTO ARTIGAS PORTLAND
513
PORTLAND ROGERS CEMENT SELLING AGENTS FOR ST MARY'S CEMENT CO LIMITED
514
MARLBORO CEMENT COMPANY PORTLAND MARLBORO CEMENT EDMONTON ALTA
515
INTERNATIONAL PORTLAND CEMENT CO. STRICTLY INTERNATIONAL OTTAWA CANADA
516
PORTLAND CEMENT SPECIAL QUALITY
517
MARCA DE FABRICA VOLCAN
518
PORTLAND DOSSON & CO. CEMENT MARQUE DE FABRIQUE
519
GIBBS & CO. DIAMOND BRAND REGISTERED LIMITED
520
CONDOR BRAND MADE IN BELGIUM
521
CEMENTOS HIDALGO CEMENTO HIDALGO PORTLAND
522
TRADE MARK
523
REGISTERED TRADE MARK
524
TRADE MARK REGISTERED
525
THE SOUTH WALES PORTLAND CEMENT & LIME CO. LTD. DRAGON BRAND CARDIFF DDRAIG GOCH CYMRU PORTLAND CEMENT
526
WORLD BRAND "HERCULES" ANTWERP
527
528
CROWN BRAND TRADE MARK
529
PORTLAND CEMENT LYS BRAND
530
PORTLAND CEMENT HARMIGNIES
531
FINEST QUALITY MADE IN BELGIUM
532
FABRICA DE CIMENT DIN TURDA S.A. TURDA
533
BEST PORTLAND CEMENT HIGH GRADE TRADE MARK REGISTERED HAMMER BRAND
534
535
PORTLAND CEMENT FIRST QUALITY
536
SPALATO SOCIETA ANONIMA DEL CEMENTO PORTLAND
537
PORTLAND CEMENTFABRIK KONGSDAL
538
539
Ta Hu Cement Company Ltd Shanghai Office 30 Kiangse
540
CEMENTO PORTLAND CEMENTO PORTLAND
541
SVENSKA CEMENTFÖRSÄLJNINGS AKTIEBOLAGET BEST PORTLAND CEMENT TRACO 180 kgs bto LIMHAMN-SWEDEN
542
PORTLAND ARTIFICIEL
543
PORTLAND-CEMENTFABRIK A/S DALEN BREVIK NORGE
544
CEMENTFABRIK NORGE PRIMA PORTLAND CEMENT KRISTIANIA
545
OVERSEA PORTLAND S.I.A. CEMENT EXPORT & IMPORT CEMENTA MALMÖ
546
LIMHAMN PORTLAND BEST M.S.B. CEMENT
547
KLAGSHAMNS PORTLAND CEMENT
548
PORTLAND—HAUBOURDIN CIMENT LILLE MARQUE DEPOSÉE
549
MALTESHOLMS CEMENTAKTIEBOLAG BEST PORTLAND CEMENT TIVOLI MARCA REGISTRADA SUECIA
550
551
PORTLAND BULL BRAND
552
AKTIEBOLAG KLAGSHAMNS CEMENTVERKS PORTLAND CEMENT K
553
COMPANIA VALENCIANA DE CEMENTOS PORTLAND FERM
554
PRIMA PORTLAND CEMENT IFO
555
556
ARTIFICIAL PORTLAND CEMENT CANNON BRAND
557
558
BRIDGE BRAND
559
SVENSKA CEMENTFÖRSÄLJNINGS AKTIEBOLAGET BALTIC BRAND MALMÖ, SWEDEN
560
COMPANIA GENERAL DE ASFALTOS Y PORTLAND ASLAND
561

FIG. 1—DOMESTIC AND FOREIGN CEMENT LABELS

BELGIUM

(Various brands classified only as follows)

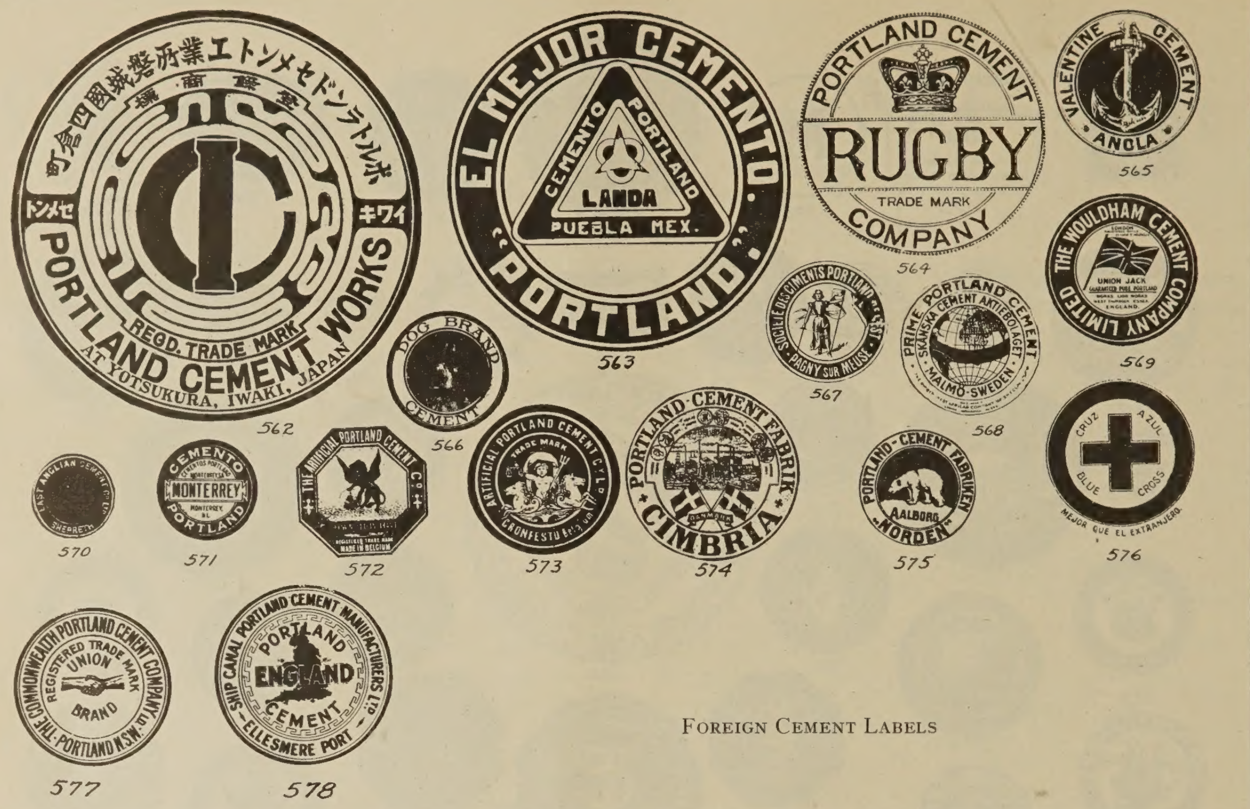
"Bell" brand
"Globe" brand
"Royal Lion" brand
"Trowel" brand
"Colibri" brand
"Griffin" brand
"Peacock" brand
"Three Lions" brand
"Dragon brand
"Eagle brand
"Red Cross' brand
"White Star" brand

LIST OF ALL BRANDS SHOWN IN THE 8 ARTICLES

It is thought that it would be a point of general interest to the readers to know just how many labels of the cement companies of the various countries have been shown in these articles. With this in view the writer has made a compilation and the result is as follows:

United States	264	Wales	3
Germany	113	Roumania	3
Belgium	63	Austria	3
England	46	China	2
Canada	24	India	1
Sweden	15	Africa	1
France	7	Ireland	1
Mexico	6	Scotland	1
Denmark	5	Switzerland	1
Norway	4	Cuba	1
Spain	4	Uruguay	1
Japan	4	New Zealand	1
Italy	3	Australia	1
		Total	578

To this total should be added the number that were not reproduced, and we find that the entire collection of labels has reached the remarkable total of 659.



Foreign Cement Labels

The Years in the Making

It is a far cry from 50 (the nucleus of the collection) to 659. It is also a very far cry from 1906 to 1923, the years required for the building up of this collection. One could almost say that the first cry which issued forth in the year 1906 should have died down to a faint whisper after an interval of so many years. However, such was not the case, as the matter of adding to the collection was the writer's principal avocation, and time only served to add to the zest of the project. So now, speaking of building up, we may truly say that we have created an edifice which, it is hoped, will be a very valuable asset to the cement industry in time to come, for reasons which should be apparent to any one connected with the trade. Surely, 17 years has been a long time, but the accomplishment of the purpose has been obtained and it has been a pleasure for the author and publishers to present these articles and the facsimiles of the labels. This work of reproduction has meant painstaking efforts on the part of the publishers of Concrete and the cost involved was considerable, but both of these were lost sight of probably in the knowledge that something of interest was being presented—something which had never been done before in any other industry.

The Author Gives Thanks

It would be amiss for the writer to let the opportunity go by to express his very sincere thanks to all of those connected with the trade who at one time or another aided him so materially, by contributing labels of their companies' product. To the many contributors to this collection, therefore, I would like to say that their individual cooperation is the keynote of the success and extent of the collection. My appreciation goes out to them and it is believed that the happy moments they may have spent in the perusal of the articles and the study of the varied assortment of labels, have done much to recompense them for their previous efforts.

To Our Readers Across the Sea

An appeal is hereby directed to those interested in this subject who may know of any cement labels of foreign origin that are not included in the collection. It would be very gratifying if copies of all such labels could be sent to the writer, as it is believed that it is the desire of the majority of the cement manufacturers that their trade-marks shall be included in the collection that will be placed on public exhibition. Proper and grateful acknowledgement will be made of the receipt of all such labels from any of our foreign readers, and it is hoped that many will avail themselves of this opportunity. Correspondence is invited by the writer from any one who may be interested in the subject of cement labels.

Old, Forgotten Ruins

All of us have at one time or another noticed, in our travels through this vale of ever-changing things, some old and apparently forgotten ruins of some mill or establishment. As we speed along the highway in our motor-cars or travel in a Pullman, or even as we slowly jog along in the antiquated *one-hoss-shay*, we catch a glimpse here or there of a tumbled-down ruin. Possibly nothing remains of the former works to indicate what it once was. The questions come to our minds: What kind of a factory was located there? How long was it idle before it fell into decay? What causes contributed to its demise? What anguish was caused the owners when it gave up the ghost? And, lastly, did it give way to something newer and more up-to-date?

The old ruins may have been only a lime kiln or grist mill. It may have been a tannery or some other more imposing structure, or it may have been a brick yard or a cement mill. If it were the latter, several conjectures are possible, but usually the one sure feature of those ruins would be the permanence of the superstructure and foundations of the mill and other buildings. It would seem to be the irony of fate that the original mill was built so well with the very essence of its own life-blood, that the permanence of the ruins stands out pre-eminently as an indication of the everlasting qualities of the product that was once the cause of hustle and bustle, where now all is quiet.

Many of the cement labels in this collection now have nothing to be remembered by, but there are some obsolete labels that have enduring monuments erected for them in the shape of the "old, forgotten ruins" which we so hurriedly pass by!

Vastness of the Cement Industry

The Steel Age this is called, but the writer adheres to the claim that steel alone should not have the privilege of this honor. The Iron Age had its inning and so did other ages. The Steel Age in its immensity can lay its greatest claim at present to the augmentation of its great production, as measured by the basic term of gross tons. Its production is estimated along the lines of tons of blooms and billets and bars, and structural shapes and ingots, whereas the Cement Age goes further. Its production has also materially been augmented, but the security of its position can be evidenced by the fact that new and more varied uses for its product can be found from day to day. And although it can be said "What would we do without Steel?" we will ask, "What could we do without portland cement?" So let us start a movement to call the present era that of the Cement Age!

The vastness of the cement industry can be appreciated even by the mere layman if he will but glance over the trade-marks already shown. It is difficult to estimate the amount of capital involved throughout the universe in the manufacture of cement. It surely must run into the billions of dollars, and the number of employees directly engaged in its manufacture and sale will total, no doubt, several hundred thousand. Compare this with the feebleness of the industry less than 50 years ago! Again, we reiterate, let us call it the Cement Age!

A Word to the Association

The majority of us will remember with what extreme difficulty the various states and municipalities were induced to construct concrete roads and highways. What hard sledding it was to prevail upon the all-powerful commissioners and engineers to allow concrete to be used for road purposes. However, the wedge was finally driven, an opening was secured (even though the cement for some of the first experimental (?) roads was donated), and time proved the *permanence and durability of concrete* for road-building purposes.

Now, as we skim over our Lincoln, William Penn, National or other of our famous concrete highways, what thought is uppermost in the mind of the individual traveller? Although he appreciates that concrete makes good highway (provided he *knows* he is at the moment travelling over concrete), what does he see as he hurries along, bent upon reaching his destination safely? Picture yourself as you go along on this same highway! What do you see? Looking to the right of you, in the distance looms an immense sign or billboard, proclaiming in giant wording the life-saving qualities of Grigglie's Chewing Gum! And, on the left of you, right opposite Grigglie's sign is a dissertation in 10-ft. letters, telling of the sleep-producing effects of a four-poster brass bed! So on, ad infinitum, until you reach the end of your journey, unless you are tempted to run your car through a few of those huge wooden, stilted structures!

You have travelled over a *concrete* highway—the best kind of road it will ever be possible to construct—and you have seen hundreds of billboards and signs along your route, advertising everything from cigarettes to automobiles. Now, then, how much advertising of portland cement have you seen, and if any, was it of a conspicuous nature?

There is need for improvement in the matter of highway sign advertising, and a few examples of circular shaped advertisements, somewhat on the order of the cement label, would prove to be a very pleasing and welcome innovation.

However, the point that it is desired to bring home to the Portland Cement Association is this: Why not advertise the merits of the concrete highway over which we travel along its very route? Let the association adopt some sort of circular designed poster or small billboard, with attractive and easily discernible letters, arranged on the order of a standard form of cement label. Let this be the standard form for out-door advertising, and have these signs erected along the route of much-travelled concrete highways, at suitable intervals, apprising the traveller that he is now proceeding over a concrete road, built for *permanence and durability!* And then add some such slogan as "Boost for Concrete Roads."

The Collection of Labels

Interested parties have frequently inquired as to what would be done with the collection and where it could be viewed. This question apparently is uppermost in the minds of many readers, and as a point of general information it will be stated that it is the intention of the owner to mount all of the miniature labels on suitable cardboard and have them neatly framed. The mounting of these labels will entail considerable study, in order that the trade-marks of each country be grouped properly for prompt and easy identification by those interested.

It is estimated that the size of the finished mounting will be about six or seven feet square. The variety of designs and colors of the trade-marks will be such that the collection as a whole will be a wonderful representation of the cement industry and the *Cement Age*. It will be placed on public exhibition upon completion, and proper mention will be made through the columns of Concrete, giving full details as to the place of exhibition, dates, etc.

Trade-Marks in this Issue

We will now turn our attention to the trade-marks reproduced herewith.

No. 501 is a new-comer, being that of the Signal Mountain Portland Cement Co., located near Chattanooga, Tenn. The story connected with the adoption of this unique trade-mark is as follows: Signal Mountain received its name during Civil War days when a point thereon called Signal Point was used as a signal station for the Union Army, as it was coming down the Tennessee Valley, and where later were fought the battles of Lookout Mountain, Missionary Ridge and Chickamauga. The signal flags depicted on the label are the standard flags used by the Signal Corps of the U. S. Army. The plant of the Signal Mountain company is located right at the foot of Signal Mountain, about five miles from the center of the city of Chattanooga. It is expected that the plant will be in operation by the time this issue of Concrete is in the hands of its readers.

No. 502 is a trade-mark of one of those old *natural* cements still on the market, and is owned by A. J. Snyder & Co., Rosendale, N. Y.

No. 503 represents the trade-mark of the Monolith Portland Cement Co., at Monolith, Calif.

No. 504 is the bright colored brand of the Wellston Iron Furnace Co., Jackson, Ohio.

No. 505 is the obsolete "Titan" brand of the old Cumberland (Md.) company.

No. 506 shows us a new design of the Lehigh company, which would seem to be more striking than its earlier design.

The Pittsburgh Plate Glass Co. comes next with its "Columbia" brand of cement to be manufactured by its limestone products department of the Columbia Chemical Division, Zanesville, Ohio. This trade-mark is just off the press and was adopted for the cement, as it is the trade-mark used by the Columbia Chemical Division for the past 25 years. Waste screenings from their present crushing plant will be used for the manufacture of the cement, which it is expected will be turned out in its new plant by March, 1924.

"Edison" now comes to the fore with its bold trade-mark, as shown in No. 508.

No. 509 represents the label of the Cement Export Co., New York.

Nos. 510 and 511 are two forms of the Pennsylvania company's brand, showing the likeness of William Penn, founder of the Keystone State.

The Marquette Company has adopted a new design for its product, as shown by No. 512. To indicate how trade-marks undergo changes, it would be interesting to note that this is the third in use by that company during the quarter century existence of the mill. The first trade-mark was circular in shape and depicted the pioneer spirit of the French-Canadian explorer, Pere Marquette, because of his influence in the development of the Illinois River valley and the territory surrounding LaSalle. Reproduction of this first trade-mark, illustrating Pere Marquette with an Indian in a canoe, proved to be too complicated, so the design was changed to the standard circular form, as shown in one of the earlier articles. About two years ago it was deemed desirable to show the name in a more individual and distinctive form, so the rectangular trade-mark in colors of white and green was adopted.

South America at last appears on the scene, and in No. 513 we have the brand of the Compania Uruguaya de Cemento, Montevideo, Uruguay, one of the subsidiaries of the International Cement Corporation.

No. 514 is the "Rogers" brand of the St. Mary's company, St. Marys, Canada.

Nos. 515 and 516 are also of Canadian origin.

No. 517 is the "Dromedary" brand of Belgian cement.

Cuba is next in line with its "Volcan" brand of the old El Almendares Fabrica de Cemento Portland, Habana.

No. 519 is a Belgian brand and so is No. 521.

No. 520 is the "Gibbs" brand of the Thames company, Grays, Essex, England.

No. 522 is a Mexican product, that of the Cementos Hidalgo, Hidalgo, Nuevo Leon.

Nos. 523 and 524 are English brands, and so is No. 528.

Nos. 525, 527 and 529 are of Belgian origin.

No. 526 comes from Wales, as is very evident.

Nos. 530, 531 and 532 are also Belgian brands.

No. 533 comes from far-off Roumania, and was received just in time for publication.

Nos. 534, 535 and 536 are Belgian brands.

No. 537 represents an Austrian cement.

No. 538 hails from Sweden.

No. 539 is "Hilton's" brand of English cement.

No. 540 represents the brand of the Ta Hu Cement Co., Shanghai, China.

No. 541 is a Belgian brand.

No. 542 is another Swedish brand.

No. 543 is the brand of Bartissol & Duclos, a French firm.

Nos. 544 and 545 are two Norwegian trade-marks, and were just recently submitted by a friend from Kristiania.

Nos. 546, 547 and 548 are Swedish brands, as are also Nos. 550 and 551.

No. 549 is the "Lille" brand of a French manufacturer.

The "Bull" brand shown in No. 552 is from Germany.

Nos. 553, 555, 559 and 560 are Swedish brands.

Nos. 556 and 558 are German trade-marks.

No. 557 is the war-like brand of a Belgian manufacturer.

Nos. 554 and 561 are Spanish brands.

No. 562 is a Japanese brand and the plant is located at Yotsukura, Iwaki.

No. 563 is the "El Hejor" brand of the Landa Portland Cement Co., Pueblo, Mexico.

Nos. 564 and 569 are well-known English brands.

Nos. 565 and 566 are the "Anchor" and "God" brands of two Belgian manufacturers.

No. 567 is the label of a French concern located at Pagny Sur Meuse.

No. 568 is the "Globe" brand from Sweden.

No. 570 represents the East Anglian Cement Co., Shepreth, Eng., and shows its "Anglian" brand.

No. 571 is the trade-mark of the Monterey Portland Cement Co., Monterey, Nueva Leon, Mexico.

The "Winged Lion" brand (No. 572) and the "Scale & Trident" brand (No. 573) next shown are of Belgian origin.

Nos. 574 and 575 are Danish labels.

The label No. 576 shows the "Blue Cross" brand of the Compania Manafacturera de Cemento Portland, at Jasso, Hidalgo, Mexico. This is a pretty label as seen in its original colors.

No. 577 is the label of the Commonwealth Portland Cement Co., of New South Wales, and the last one, No. 578, represents the well known "England" brand of the Ship Canal Portland Cement Manufacturers, Ltd., Ellesmere Port, England. This is the latest label added to the collection.

CONCLUSION

During the preparation of this installment, a bulky package was received by the author from the publishers. It contained the original miniature cement labels which had been used in making the reproductions shown in CONCRETE. After dealing for months with the labels in black and white in these articles, what a happy diversion it is to again gaze upon the hundreds of artistically colored brands, with their multifarious designs, and wishing that each reader could have the opportunity of beholding these trade-marks in all their greatness!

L'ENVOI

Now, when a writer thinks of words
  At parting to address you,
He drops all strict formality
  And says, "Good-bye, God bless you!"

Then through the day with pleasing song
  It lingers to caress you;
I'm sure no human heart goes wrong
  That's told, "Good-bye, God bless you!"

Serial 2440, "Subject List of Reports of Investigations Issued During 1922," just issued by the Bureau of Mines, lists a number of reports on ceramic and quarrying subjects which may be obtained free from the Bureau of Mines, Washington, D. C. Among the topics treated in these reports are storage and transportation of portland cement; lime-plant quarrying methods; production of alumina from clay by the Miguet process; feldspar mining and milling; silica; soapstone, etc.

New Canadian Plant Under Construction

The plant of the National Cement Co., now under construction at Montreal-East is shown in the accompanying illustration which is a reproduction of a perspective drawing of the plant.

The raw material to be used is the cement rock which is found on the island of Montreal and which is quite similar to that of the Lehigh district. This rock as a whole is practically the exact composition for the manufacture of high grade portland cement and does not need the addition of any limestone or shale, the correct composition being obtained by properly working the various ledges in the quarry.

The company owns over 120 acres underlaid with cement rock. The latter has been prospected to a depth of 100 feet but the depth is unquestionably very much greater than this and it is estimated that there is sufficient rock at the latter depth to last the proposed plant for at least 100 years. The property is situated within the limits of Montreal-East, which town adjoins the city of Montreal. The National Cement Co.'s property is within a mile of the large Montreal mill of the Canada Cement Co. which utilizes the same strata of cement rock.

The property is about 1¾ miles north of the St. Lawrence River, which together with the Canadian National Railways and the Montreal Tramways will afford adequate transportation facilities.

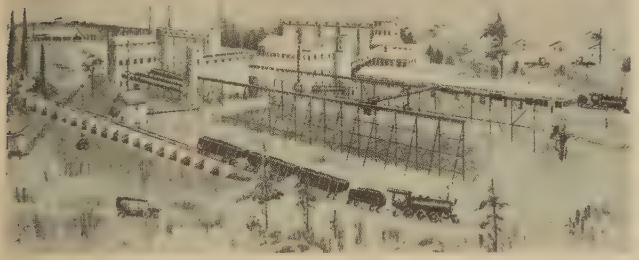


Fig. 1—View showing how the National Cement Company's plant will look when completed

The proposed plant is designed to produce 900,000 barrels of cement annually and is so laid out as to permit of an increase in capacity without shut-down at the original unit.

The equipment will consist of a roll jaw crusher to be followed by a hammer mill for the preliminary reduction of the material. The raw material will be dried and then stored.

The grinding of both the raw material and the clinker will be done by means of gear driven Bradley-Hercules mills followed by 7 ft. diameter x 26 ft. long tube mills. Both the raw and the clinker grinding mills will be located in the same room and the mills will be interchangeable so that any mill can be used for either raw material or clinker.

There will be a special arrangement of blending silos for properly adjusting the composition of the ground raw material as fed to the kiln.

The burning will be done with three 9 ft. diameter x 160 ft. long Vulcan kilns. These will be heated by the unit system. There will be a clinker storage for 250,000 bbls. which will consist of a bridge crane with grab bucket. The stockhouse will consist of 16 reinforced concrete silos. It will have a total capacity of 150,000 bbls. of finished cement. The pack house will be of steel and contain the bag sorting and cleaning departments. There will be a bag storage for 500,000 bags which will be built on the unit system in which the bags will be stored in small separate fireproof vaults. The machine shop, storeroom, electrical shop, carpenter shop, washroom, mill office and laboratory will be located in one building approxinately 30 ft. x 55 ft. long and will be of reinforced concrete construction with steel roof trusses.

Power will be purchased, although provision has been made for the installation of waste heat boilers at any time desired. Practically no belts or chains are to be used throughout the plant. The tube mills are direct connected to synchronous motors and the Hercules mills are also direct connected to the motors.

All the buildings are of steel, except as noted above, with corrugated roofing and siding. The buildings are of approximately the following dimensions:

Crusher building	85 ft. x 30 ft.
Dryer building	120 ft. x 30 ft.
Stone Storage	165 ft. x 44 ft.
Mill building	96 ft. x 92 ft.
Kiln buildings	30 ft. x 60 ft. and 39 ft. x 60 ft.
Stockhouse	208 ft. x 52 ft.
Pack House	48 ft. x 65 ft.
Machine Shop, etc.	255 ft. x 30 ft.
Bag Storage	68 ft. x 55 ft.

The auxiliary building which contains the machine shop, electrical repair shop, storeroom, wash-house, chemical laboratory and office of the new National Cement Co., is about completed and practically all the excavating and some of the foundation work are also finished. It is expected that the plant will be completed by May of next year. A great deal, however, will depend on how soon winter sets in, as after winter really comes, very little construction can be carried on in the open air in Canada. Richard K. Meade & Co., Baltimore, are the engineers.

Manitowoc Portland Cement Co., Manitowoc, Wis., is installing three 42-in. screen type Fuller mills for pulverizing fuel. Also the Fuller-Kinyon transport system is being installed, by means of which the pulverized coal will be pumped from the preparation plant to the various service bins. This system will be equipped with electro-pneumatic remote control device, by means of which the operator will be advised by a series of electric lights whenever the service bins are supplied with fuel or need replenishing. This arrangement also makes it possible for the operator to divert the flow of pulverized material from the main line to any of the branch lines without leaving his station in the power house.

Wolverine Portland Cement Co., Coldwater, Mich., is installing two 46-in. gear-driven, screen type Fuller mills and a Fuller-Kinyon transport system for the preparation and conveying of pulverized fuel.

The La Tolteca Portland Cement Co., Mexico, D.F., has started its waste heat boiler plant in connection with a 10-ft. x 150-ft. kiln. Preliminary results indicate that more than enough power will be generated to grind both the raw material and the clinker from this mill, besides supplying all the steam required for heating and atomizing the fuel oil used in this kiln, in the dryer, and in another 8-ft. x 135-ft. kiln.

The boiler was made by the British Babcock and Wilcox Co. and is somewhat different in design than the American Babcock and Wilcox boiler, being practically a standard Babcock and Wilcox boiler and not of the double deck type. The power unit consists of a 100 K.W. G. E. Curtis turbo-generator with Worthington condenser.

Cement Manufacturers' Profits Analyzed

For the first time in the history of the cement industry in the east, an impartial analysis of the profits of cement manufacturers, made by H. Parker Willis, Professor of Banking at Columbia University, has just been completed, according to the Cement Information Service. Professor Willis' report covers earnings and operations for the year 1922. It is based on the operating returns of eleven of the principal eastern cement companies as reported in their income tax statements to the United States Treasury Dept. These companies produce 75% of the portland cement manufactured in the eastern states.

According to Professor Willis' report, the eleven companies whose operating figures were analyzed show an average return on their actual investment of about 7.3% for the entire group. Returns earned by the individual companies vary widely. Several were operated at a net loss and the largest percentage of return was by no means obtained by the largest companies. It is also pointed out in this connection that the production of the mills covered in the report was the greatest in their history.

Professor Willis' report follows:

In order to determine from an unprejudiced standpoint the operating results of the year 1922 as reflected in the position of the principal cement mills in the Eastern District of the United States, some leading producers of portland cement in that district recently offered to place their operating returns at my disposal with the request that I should analyze them and determine the facts shown for that year.

Eleven companies, producing over 75% of the cement manufactured in the Eastern District, thus placed at my disposal their operating figures for the year 1922. I do not feel that the figures for the remaining companies in the Eastern District which are not at hand would materially change the facts presented as they represent less than 25% of the production of the district.

The returns which I am presenting may, therefore, be taken as representative. They have in every case been based upon the income tax statements furnished by the concerns in question to the United States Treasury. They are, therefore, substantially uniform in their basis of computation besides being free of doubts as to accuracy which might exist were they merely the results of local bookkeeping, not checked up or adjusted to any general standard.

The industrial results of the year 1922 on the part of these mills have been the production of the largest volume of cement in their history.

For the 11 companies under consideration, this output was 28,774,191 barrels, or over 25% of the entire product of the country as a whole. Gross sales of the 11 companies, comprising both new and old product, were worth $49,592,872.

The relationship between the output thus indicated and the capital invested will be inferred from the statement that the aggregate net worth of the invested property of the concerns as reported was $87,003,767.

On this actual investment, the 11 mills have earned a total net income after expenses and taxes amounting to $6,363,461, or an average return of about 7.3% for the entire group.

It is worth noting that great variations in the percentage of net earnings to net worth are found, some companies reporting only a fraction of 1% as their net return, while others run higher in varying degrees. Several were operated at a net loss. It is also interesting to observe that the largest percentage of return is by no means obtained by the largest companies.

Total cash dividends declared during the year 1922 were $2,278,634, or an average percentage of slightly over 3.5 on a total capitalization of $64,664,061 (reckoning both common and preferred stock as the basis of computation). Four companies declared no dividends whatever. Two stock dividends were declared, amounting together to $2,823,900, or slightly less than 4.6% on the combined capitalization just mentioned.

In view of the fact that, during the discussions of industrial earnings in recent years, much has been made of statements that earnings returns were frequently vitiated by the existence of very large allowances for depreciation, it is especially worth comment that total allowances for depreciation and depletion of every kind aggregated, during the year 1922, for this group of companies, a total sum of $2,984,014, or the equivalent of about 3.4% of the entire net worth of the group as already stated.

It would appear that whether viewed as a return upon business turnover or upon the value of the output; or whether viewed as a return upon actual investment, the earnings of representative cement producers during the year 1922 have been well below the average obtained by industrial undertakings at large.

From this point of view, too, it is noteworthy that the 11 companies under study materially reduced their prices during 1922, receiving on the average $.15257 less per barrel than in 1921. This figure represents the difference between an average 1921 price of $1.75453 and a price for 1922 of $1.60196 as reported.

Lime Association Plans Extensive Research Work

The National Lime Association at its last annual convention adopted a plan of organization which assures the continuation of its growing program of technical and research work and established a stability to the National organization which will make it possible to establish and follow through to conclusion, problems of research for the general benefit of the industry.

The National officers and Board of Directors remain as the controlling body, directing the entire research and trade promotional program of the industry, but for the purpose of assuring a continued source of income for all departments of the association and adding more flexibility to the local field promotional work, the program has been divided into two separate departments; first, the National program of technical research, publicity and National promotion; second, local trade promotional work by men in the field, sub-divided and directed from two Division offices with headquarters located at Washington and Chicago.

The members of the association have agreed on a basis of dues for a period of two years, which will afford the National program of technical research work a larger working budget than has heretofore been available, and the members in both the Eastern Division and the Central Division have agreed on a basis of additional dues which allows for a considerable increase in local field promotional work in the two divisions.

In addition to work at the association laboratory in Washington, the Lime Association is supporting, at the present time, fellowships in five leading technical institutions where various special problems of investigation and research work are being carried through to conclusion. Cooperative relations also exist with other institutions where important research on lime problems is being conducted. The increased budget for this class of work will make possible, under the two year program, the completion of the many problems on hand, and the inclusion of new important problems.

Negotiations are reported to have reached an advanced stage for the erection of a further large cement works at Aberthaw, about 12 miles from Cardiff, Wales, involving an outlay of upwards of £500,000. The site is near that of the Aberthaw and Bristol Channel Cement Works. A large acreage of land is said to have been acquired by a Cardiff syndicate, who are carrying through preliminaries in connection with the new enterprise, details of which are not yet available.

A record breaking cargo of cement, the largest to be brought to the Columbia river for more than 12 years, arrived on the Norwegian steamer Hallfried, July 28, discharging about 2000 tons at Portland, Ore. and approximately 2000 tons at Longview.

Import movement of cement, which virtually ceased more than 10 years ago, with the establishment of cement factories on the Pacific coast, has been resumed this season on account of the huge demand for building materials.

Floods Injure Lime Industry in Maritime Provinces

By William J. McNulty

Never in the history of lime manufacturing has the lime industry suffered so greatly in New Brunswick, Prince Edward Island and Nova Scotia, from floods as during the month of May, 1923.

All of the rivers, swollen to unusual proportions, flooded many miles of land, some of it three miles from the banks of the rivers. Lime kilns were inundated and some of the machinery seriously damaged; in fact some of the kiln machinery was utterly destroyed. Buildings were torn apart and sent adrift down the rivers. The extent of the damage will not be known for some time, but indications are that damage to the extent of several hundred thousand dollars has been inflicted.

Buildings practically new were destroyed and in some instances all that remain are the foundations. Machinery has also been lost, having been dragged to the bed of the river by the undertow. Some of the companies which have suffered particularly heavy losses because of the floods in the lime manufacturing properties are Randolph and Baker, which maintains extensive lime manufacturing plants at Randolph, N. B.; Fraser Companies, Ltd, which operate a number of lime manufacturing plants at Plaster Rock, Fredericton, and Edmundston, N. B.; Murray and Gregory Ltd, which maintains lime manufacturing plants at St. John and Pokiok N.B.; Snowball Co., Ltd., which operates lime kilns at Chatham, N. B.; Bathurst Co., Ltd., operating lime manufacturing plants near Bathurst, and elsewhere along the Nepisiguit river; Stetson, Cutler Co., Ltd., operating lime manufacturing plants at St. John, N.B.; Eastern Lime Co., operating lime manufacturing plants near Monoton, N. B. Smaller companies have also suffered severe loss.

The loss by floods was felt just as the market was showing strength and orders were coming in from New England. Some of the companies had large quantities of manufactured lime ruined and were compelled to cancel orders from Boston. In some instances, schooners arriving in St. John to load lime were forced to return without the full cargoes because of inability to get the lime, or approach the plants.

C. H. Peters Sons, of St. John, N. B., owners of a tanning industry for more than 35 years have taken over the Claremont Lime Company's plant at Torryburn, N. B. The plant was threatened by the floods on the Kennebeccasis river, but escaped serious damage. The site of the lime manufacturing plant was formerly a roadside hotel known as the Claremont House.

Two miles west of the Claremont Lime Company's plant is the big plant of the Brookville Lime Mfg. Co. This is, like the Claremont plant, a comparatively new industry, equipped with new machinery, and capable of a very large output annually. Both of these plants have the added benefit of close connection with the main line of the Canadian National Railways System between St. John and Monoton.

A number of new sites are to be developed in the course of the coming summer in New Brunswick. Extensive deposits of lime rock are located along the tributaries of the St. John river, and are as yet undeveloped. For instance, the Fraser Companies, Ltd., have many miles of lime rock along the Tobique river. At Plaster Rock, on the Tobique, they have several large lime manufacturing plants, with production increasing annually.

The building boom in New England, particularly in Massachusetts, has been an immense benefit to the lime industry. Much of the lime used in New England building operations is secured in New Brunswick, Nova Scotia and Prince Edward Island. Although the floods interfered with the shipment of the lime from the ports of the maritime provinces during the spring, normal conditions have now been restored, and heavy shipments are being made.

The Stetson, Cutler Co., Ltd., one of the biggest lime manufacturing concerns in New Brunswick, is dominated by New England and New York capital. F. C. Beatteay, manager of the New Brunswick interests of the company, recently returned from a trip to Europe. While in Europe he studied lime conditions in England, Ireland and Scotland.

Specifications for Quick Lime for Causticizing

The manufacture of caustic alkali consumes a large tonnage of quicklime annually. For this purpose a very pure grade of lime is required. Purity is determined not by the total content of calcium oxide but rather by the content of calcium oxide which is available in the process for which the lime is used. A careful study of the requirements of the users of the quality of lime which is actually being used, and of the possibilities of production, have led to the establishment of the figure 85 as being a fair standard for the percent of available lime.

Unlike most materials which are bought on specification, chemical lime is more valuable if it has a higher degree of purity than that required by the standard, and less valuable if it has a lower degree. For this reason, it has been recommended that a bonus and penalty clause be inserted in the contract in order to take care of variations from the 85%. While the material is less valuable but can still be used if the purity falls below the standard, there is a point reached eventually when the value of the material becomes such that it is poor economy to use the lime for this purpose. A careful survey of the situation has led to setting this figure at 70%.

In working up the details of this specification, the Bureau has been assisted by an Interdepartmental Conference on Chemical Lime, composed of representatives of various government agencies. The specifications have been partially approved by the National Lime Association, representing the producers and by the Technical Association of the Pulp and Paper Industry, representing the largest group of consumers of this kind of lime.

This specification is embodied in Circular No. 143 of the Bureau of Standards, entitled, "Recommended Specifications for Quicklime for Use in Causticizing." Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 5 cents.

Approximately 3,000 barrels of cement were shipped to Honolulu August 12, aboard the steamship Manulani by the Olympic Portland Cement Co. Other shipments to that city will be made by the company this year.

Portland Cement Output in July

The statistics shown in the following tables issued by the Department of the Interior, and prepared under the direction of Ernest F. Burchard, of the Geological Survey, are based mainly on reports of producers of portland cement but in part on estimates. The estimates for July, 1923, were made necessary by the lack of returns from one producer.

Production, Shipments and Stocks of Finished Portland Cement by Districts in July, 1922 and 1923, and Stocks in June, 1923, in Barrels

Commercial District	Production		Shipments		Stocks at end of July		Stocks at end of June 1923a
	July 1922	1923	July 1922	1923	1922	1923	
Eastern Pa., N.J. & Md....	2,842,000	3,216,000	3,551,000	3,484,000	2,457,000	2,814,000	3,082,000
New York	569,000	654,000	662,000	730,000	732,000	655,000	730,000
Ohio, Western Pa. & W. Va......	1,240,000	1,284,000	1,352,000	1,442 000	1,014,000	757,000	915,000
Mich....	722,000	783,000	871,000	895,000	437,000	320,000	433,000
Ill., Ind. & Ky....	1,960,000	1,817,000	2,673,000	1,848,000	920,000	497,000	529,000
Va., Tenn. Ala. & Ga.	550,000	626,000	565,000	583,000	319,000	234,000	191,000
Eastern Mo., Ia., & Minn..	1,106,000	1,259,000	1,492,000	1,544,000	851,000	1,014,00	1,299,000
Western Mo., Neb. Kans. & Okla.....	843,000	956,000	810,000	1,062,000	841,000	873,000	978,000
Texas....	362,000	397,000	424,000	411,000	173,000	187,000	201,000
Colo. & Utah....	272,000	256,000	274,000	276,000	175,000	159,000	178,000
Calif.....	715,000	1,083,000	761,000	1,069,000	235,000	169,000	156,000
Ore., Wash. & Mont....	376,000	289,000	415,000	368,000	279,000	397,000	476,000
	11,557,000	12,620,000	13,850,000	13,712,000	8,433,000	8,076,000	9,168,000

(a) Revised.

Stocks of clinker, or unground cement, at the mills at the end of July, 1923, amounted to about 3,865,000 bbls. compared with 4,172,000 bbls. (revised) at the beginning of the month.

Production, Shipments, and Stocks of Finished Portland Cement by Months in 1922 and 1923, in Barrels

Month	Production		Shipments		Stocks at end of month	
	1922	1923	1922	1923	1922a	1923
January......	a4,291,000	7,704,000	a2,931,000	5,419,000	13,316,000	a11,470,000
February.....	4 278,000	8,085,000	3,285,000	5,963,000	14,142,000	a13,502,000
March.......	6,685,000	9,880,000	7,002,000	10,326,000	13,848,000	a13,045,000
1st quarter.	15,254,000	25,669,000	13,218,000	21,708,000	....	....
April.......	9,243,000	11,359,000	8,592,000	12,954,000	14,470,000	a11,463,000
May.........	11,176,000	12,910,000	12,749,000	14,257,000	12,893,000	a10,144,000
June........	11,245,000	12,382,000	13,470,000	13,307,000	10,718,000	a 9,168,000
2nd quarter	31,664,000	36,651,000	34,811,000	40,518,000	....	....
July.........	11,557,000	12,620,000	13,850,000	13,712,000	8,433,000	8,076,000
August......	11,664,000	....	14,361,000	....	5,746,000	....
September....	11,424,000	....	12,444,000	....	4,724,000	....
3rd quarter	34,645,000	....	40,655,000	....	....	....
October......	12,287,000	....	12,854,000	....	4,149,000	....
November....	11,349,000	....	10,167,000	....	5 320 000	....
December....	8,671,000	....	4,858,000	....	9,267,238	....
4th quarter	32,307,000	....	27,879,000	....	....	....
Preliminary total.......	113,870,000	....	116,563,000	....	....	....
Amount of under estimate	919,984	....	1,138,216	....	....	....
Final total...	114,789,984	....	117,701,216	....	....	....

(a) Revised.

The Bureau of Foreign and Domestic Commerce, of the Department of Commerce, reports that the imports of hydraulic cement in June, 1923, amounted to 111,559 bbls. valued at $180,146. The total imports in 1922 amounted to 323, 823 bbls. valued at $628,846. The imports in June were from England, 36,370 bbls.; Denmark, 29,400 bbls.; Quebec and Ontario Provinces, Canada, 19,153 bbls.; Norway, 15,454 bbls.; Belgium, 6,172 bbls.; other countries, 5,010 bbls. The imports were received in the following districts: Oregon, 17,878 bbls.; North Carolina, 17,277 bbls.; Vermont, 15,156 bbls.; Porto Rico, 14,066 bbls.; San Francisco, 12,540 bbls.; South Carolina, 11,897 bbls.; New Orleans, 9,043 bbls.; Georgia, 6,172 bbls.; other districts, 7,530 bbls.

The exports of hydraulic cement in June, 1923, were 77,203 bbls., valued at $236,166, of which was sent to Cuba, 29,929 bbls.; to the other West Indies, 6,464 bbls.; South America, 25,720 bbls.; Mexico, 9,972 bbls.; Central America, 2,635 bbls.; Canada, 1,438 bbls.; and to other countries, 1,045 bbls.

The statistics of imports and exports of hydraulic cement in July, 1923, are not available.

Imports and Exports of Hydraulic Cement, by Months, in 1922 and 1923, in Barrels (a)

Month	Imports		Exports	
	1922	1923	1922	1923
January........	17,039	71,686	70,725	73,169
February.......	5,157	20,529	82,421	88,624
March..........	1,597	66,521	103,556	98,861
April...........	10,855	76,416	75,412	85,662
May...........	2,524	88,480	100,068	103,634
June...........	14,198	111,559	96,263	77,203
July............	957	(b)	119,491	(b)
August.........	56,757	......	105,156	......
September......	(c)42,641	......	78,615	......
October.........	(d)65,228	......	80,402	......
November......	61,010	......	108,798	......
December.......	45,860	......	106,938	......
	323,823	......	1,127,845	......

(a) Compiled from records of the Bureau of Foreign and Domestic Commerce. (b) Imports and exports in July, 1923 not available. (c) Covers period Sept. 1-21. Imports Sept. 22-30 included with Oct. (d) Includes imports period Sept. 22-30. Monthly fluctuations in production, shipments, and stocks of finished portland cement.

Increased Production Capacity Meets Imports

In an analysis of the current Dow Service Daily Building Reports in the *New York Times*, the action of cement manufacturers in increasing production and holding prices steady, is considered the barrier that prevents an influx of the European product. It is cited that the well-informed business man finds himself face to face with a problem he has never before had to meet, namely, the buying and selling of European building materials.

Cement manufacturers stand apart because of their anticipation of such a situation as now exists. In recent years they have been steadily adding to their daily capacity and are still doing it.

In the Lehigh district alone the Nazareth Portland Cement Co. has added 700 barrels daily to its output; Dexter, 1000; Penn Allen, 700; Pennsylvania, 800; Bath, 600, and Phoenix, 600 to 800.

The Lawrence has plans on hand now for a 33% increase in daily capacity.

The Glens Falls is putting in an additional kiln; the Pennsylvania plant at Cayuga has just put in a new kiln and the Atlas by acquisition and installation has added 11,000 barrels daily to its output.

In consequence, when foreign cement began coming in it was not able to penetrate more than 75 miles inland and its bulk has been confined mostly to New Orleans. The price-without-change policy maintained since last autumn has met the demand for price stability at home and has kept down foreign competition at the same time.

Cement, lime, bauxite and gypsum are named under the list of minerals that will be included in the activities of the new Non-Metallic Mineral Station established by the Bureau of Mines at New Brunswick, N. J.

With a small personnel, only selected problems can be chosen at the start of the activities at the new station. It is probable that some investigation will be conducted in the lime industry, but plans for the work are not yet fully developed.

Men and Mills

Notes from the Field

The Yosemite Portland Cement Co. is incorporated in the State of Nevada, with a preferred capital stock of $1,500,000 and 15,000 shares of common stock, nominal par value. The officers and directors of the company are George E. Nicholson, president, Kansas City, Mo.; James G. Berryhill, vice president, San Francisco; C. S. Woody, vice president and treasurer, San Francisco; Clyde Waterman, director, San Francisco; E. DeLos Magee, director, attorney, San Francisco.

Contracts have been entered into with the Hunt Engineering Co. of Kansas City to build a 2,000-bbl. wet process cement plant, which it is expected will be the last word in cement plant construction. The company owns extensive rock deposits on the Yosemite Valley R. R. together with some 500 acres of lime rock deposits near Porterville, Calif. The first mill will be built at Merced on the main line of the Santa Fe and Southern Pacific and Yosemite Valley Railroads, with direct connections with all three lines. Power will be furnished by the San Joaquin Light & Power Co., whose lines cross the lime deposits as well as the plant site.

A state-owned and operated cement plant with adequate capacity to supply all Michigan state government demands for highways and building purposes, and probably a state fertilizer plant to be operated in connection with it, is a plan which Governor Groesbeck has determined upon and the details of which are now being worked out by men specialized in such industries. Authority to build and operate such a plant will be asked of the legislature when it meets in special session in the fall, according to a report from Lansing.

The first cement produced in the new Port Huron factory of the New Egyptian Portland Cement Co. was used by local contractors for the paving of Port Huron streets and local contractors are now using a large part of the product of this new Port Huron industry.

Production of the plant is steadily nearing capacity, according to Maynard D. Smith, general manager of the local factory. The capacity of the plant is 1,800 barrels a week. No difficulty has been experienced in disposing of the cement produced at the plant, the demand of the local market being especially good just at this time. As far as possible, the plant will attempt to keep all construction work in the vicinity supplied.

The Swedish motorship Buenos Aires arrived Aug. 27, at Longview, Oregon, and delivered about 2,000 tons of cement from Europe. The vessel will take wheat from North Pacific ports for European delivery.

The Superior Portland Cement Co. has applied to the Federal Power Commission for a license permitting a short section of its water conduit to cross a small section of public land near Jackman Creek, a tributary of the Skagit River, Skagit county, Washington. The plant will develop about 26,000 horsepower, to be used in manufacturing cement.

Frank G. Conkling has been appointed assistant to the president of the National Cement Co., Birmingham, Ala., and will help direct the sales policy. W. Jess Brown will continue in his position as sales manager as heretofore.

The Beaver Portland Cement plant which had been closed about three weeks was ready to resume operations late in August. Only minor repairs were made. Annual repairs usually require six weeks. The new quarry opened at Marble Mountain will supply the plant with limestone, while the clay and shale will be quarried adjoining the plant at Gold Hill. The quarry two miles below the plant at Gold Hill will be closed and the equipment moved to the Marble Mountain quarry.

An agreement has been consummated whereby the Fuller Engineering Co. will act as sole licensee in the United States and Canada for all new business of the Quigley Fuel Systems, Inc.

The engineering personnel of the Quigley Fuel Systems, Inc., has become associated with the Fuller Engineering Co. and is now in a better position to render more complete engineering services, as by this arrangement designs can be presented from a wider selection of pulverized fuel equipment.

In the future all business of the Quigley Fuel Systems, Inc., will be conducted through the main and branch offices of the Fuller Engineering Co.

Mayor W. J. O'Connel, of Concrete, Wash., purchasing agent for the Superior Portland Cement Co., has returned with his bride after a vacation of several weeks.

Importations of cement from Europe are creating a surplus of this building material in the Oregon market, but the price of $3.40 still remains, the same as last year. The Oregon Portland Cement Co. has surplus cement at its Oswego plant and the Beaver Portland Cement Co. has plenty of cement on hand. The first of the Sun Portland Cement Co.'s product will be on the market from eastern Oregon about September 1, it was announced.

The Lehigh Portland Cement Co. has filed a complaint with the Interstate Commerce Commission alleging unreasonable and discriminatory freight rates on cement from its plant at Iola, Kans., to points in the same state via interstate routes and to other common markets in Missouri, Iowa, Minnesota, South Dakota, Nebraska, Colorado, Wyoming and Montana. The establishment of a reasonable basis of rates in the future is requested.

That the Huron Portland Cement Co. has purchased all of the Gilchrist holdings, including the property of the old Alpena Cement Co. is reported from Alpena.

The second annual celebration of the Superior Portland Cement Co. was held Aug. 14.

John F. Humburg and associates of San Francisco have underwritten for $4,000,000 the securities of the most extensive plant in California at Exeter near Three Rivers. This is the largest deposit of the highest grade cement rock in the state available to transportation, it is claimed. Lent & Humphrey, attorneys of San Francisco, will be the counsel for the new corporation.

Another large blast was made at the plant of the Louisville Cement Co. at Milltown, Indiana, July 28th. It is estimated that 80,000 tons of rock were shot over, requiring 15,515 lbs. of dynamite and 2,300 feet of Cordeau Bickford fuse.

Work at the cement plant of the Tidewater Portland Cement Co. ceased for a period of ten minutes, Friday morning, Aug. 10, in respect for the late President Harding.

The Hudson Valley Cement Co. at Alsen (formerly Alsen Cement Co.), after having been shut down for about five months, during which time repairs and necessary alterations were made to change from the dry to wet process, has resumed full operations—3,000 barrels a day.

(*Tonindustri-Zeitung.*)

The largest Indian cement plant is the Dwarka Cement Co. in Dwarka on the coast north of Bombay. This plant is equipped with American machinery and of the most modern kind, with two rotary kilns. The capacity is 50,000 bbls. per month.

The three next in size are: the Katni Cement Co. in Katni, with 16,000 bbls. per month, Bunti Cement Co. in Lakheri with 13,000 bbls., and the Indian Cement Co. in Porbander with 10,000 bbls. per month. The Madras Cement Co. in Madras has a capacity of 5,000 bbls. per month, and several new plants are contemplated. The influence of the increase in cement plants in India may be seen from the following table showing the decrease in imports of cement during the past few years:

1913–4	1,032,000 bbls.
1914–5	977,000 bbls.
1915–6	838,000 bbls.
1916–7	574,000 bbls.
1917–8	504,000 bbls.

The Connecticut Blower Corporation, Hartford, Conn., has been incorporated under the laws of Delaware with capital $250,000, M. E. Keeney, president, C. H. Keeney, secretary, C. E. Keeney, treasurer. They have taken over the International Blower Corporation and the Hartford Sheet Metal Works. The products manufactured and installed are of a large variety, such as blowers and exhaust fans, blower systems of all kinds, dust collecting systems, exhaust systems, ventilating systems, etc. The plant of the International Blower Co. will be utilized until fall, at which time a considerably larger plant will be occupied.

J. H. Kempster has been appointed general superintendent of the Buffington plant of Universal Portland Cement Co. located at Buffington, Ind., succeeding the late C. O. Soderquist. This plant consists of mills Nos. 3, 4 and 6.

In 1907, two years after graduating as chemical engineer from the University of Michigan, Mr. Kempster entered the service of the company as chemist of Plant No. 2, at South Chicago. In 1908 he was appointed chemist of the Buffington plant. In May, 1915, Mr. Kempster was advanced to the superintendency of mills Nos. 3 and 4. Three years later he became superintendent of mill No. 6 which position he has held until his present appointment as general superintendent of Buffington plant.

The Ship Canal Portland Cement Manufacturers, Ltd., Ellesmere Port, England recently dispatched direct from its works, the steamship Mongolian Prince carrying the largest individual cement shipment that ever left England. The Ship Canal works is capable of turning out 5000 tons of cement per week.

The Meteor Transport and Trading Co. has been organized to purchase building materials, wholesale, from Northern producers located near the seaboard; to transport such products on regular steamer service to the Miami Beach Terminals of the company; and to wholesale and retail such products in the Miami district. The company was organized by Charles Warner and associates under the name of the Warner Transport & Trading Co., but in order to avoid confusion at the Wilmington end, because of two companies with the name Warner in them, the name Meteor Transport & Trading Co. has been adopted.

The Meteor company is not a subsidiary of the Charles Warner Co., but is affiliated with it and operated as an independent organization. The lime products of the Charles Warner Co., and the American Lime & Stone Co., will be handled and also prominent brands of Lehigh Valley cement, for distribution in the Miami district.

The company has made a long term lease of the Causeway Terminals at Miami Beach where its discharging wharves and general warehouses are now located. So far, only one steamer has been chartered for this service which will work on the regular 28-day schedule but the company is prepared to make additional charters as the business grows.

A full retail service has been installed using G. M. C. trucks for the business.

New Cement Steamer Launched

The new steamer John W. Boardman was launched on September 6, by the Huron Portland Cement Co. at the Toledo Shipbuilding Yards, Toledo, Ohio. The steamer Boardman, the most unique modern carrier on the Great Lakes, will engage exclusively in transporting the Huron company's portland cement.

The steamer Owana was chartered to privately conduct a launching party from Detroit, where the offices of the Huron Portland Cement Co. are located, to Toledo.

Trade Publications

Nineteen Stories of Lime is the title of a new book issued by the Central Division of the National Lime Association illustrating the various uses of hydrated lime in concrete construction. Large construction jobs on which hydrated lime was used in the concrete are illustrated together with letters from the architects, engineers and builders connected with the project.

The various advantages which are attributed to the use of hydrated lime in concrete are: watertightness, workability and resilience.

Move Your Oldest Stock First, by the Atlas Powder Co., Wilmington, Del., urges the company's customers to move the oldest stock first, thus keeping the supply always in good condition by not giving it a chance to deteriorate with age or weather conditions. Two rules are given which it is claimed dealers will find to their advantage if followed: Rule 1—"Draw from the oldest stock first. This will be an easy matter if every new shipment that is received is placed back of the old stock or underneath it as the case may be;" Rule 2—"Group the cases in the magazine, keeping the corresponding brands and grades together and pile the cases in such a manner that they will lie flat with the top side up and with the end showing the brand and grade to the front."

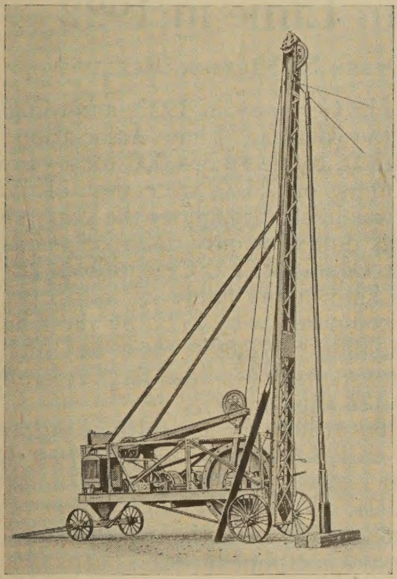
Small-Diameter Dynamite Cartridges Inferior, is the title of a leaflet published by the Atlas Powder Co., Wilmington, Del., in which the use of larger diameter cartridges is recommended. It is pointed out that as the diameter of cartridges of dynamite, gelatins, permissibles and other high explosives is reduced, the velocity, sensitiveness and efficiency is also reduced and that objectionable fumes given off are increased as a consequence. It is further stated that both economy and safety in the use of explosives are lost by the use of a ⅞-in. diameter cartridge and that every effort should be made to use drill holes of such a diameter as will accommodate cartridges of not less than 1¼-in. diameter.

Armstrong All Steel Drill

Among the improvements and developments that have been made in quarry machines and equipment during the past few years, is included the Armstrong All Steel blast hole drill, which was recently placed on the market by the Armstrong Mfg. Co., Waterloo, Iowa.

This company previously built blast hole drills made partly of steel and partly of wood. In these machines the steel parts were bolted together; but experience proved this construction to be unsatisfactory for the reason that wood deteriorates fast and bolts will not hold rigidly enough to be satisfactory for any length of time.

The new outfit is built entirely of steel except the band wheel and two sets of the larger bearings. The frame is constructed of angle steel on a heavy channel steel chassis, and there are no bolts in any part of it—every joint being hot riveted. It is made like a steel truss bridge, and is found to be true and rigid, even after being subjected to excessive and unusual warping and twisting strain.


New Armstrong All Steel Drill

The power is supplied by either a gasoline engine or electric motor at the option of the buyer. It has an all steel derrick, which is fitted with the Armstrong patents covering the use of wire line in place of manila cable. Steel line, it is claimed, costs less than half that of manila cable and lasts several times as long, thus reducing the cable cost per foot drilled to a minimum.

The machine is built in traction and non-traction models. The tractor weighs eight tons and is as easily handled as any ordinary truck or farm tractor.

New Non-Freezing Explosive

For years, explosives manufacturers have struggled with the problem of making an explosive which would possess all the advantages of dynamite and at the same time be immune from freezing.

Numerous forms of such explosives have been tried in years past but, as the Atlas Powder Co. claims, the problem has remained unsolved until the development of the new Atlas non-freezing explosive—Ammite.

In Ammite, the manufacturers claim to have produced the ideal non-freezing explosive—an explosive that retains all the advantages of dynamite in strength, velocity, water-resistance, sensitiveness and stability combined with the additional advantages of being non-freezing and of not causing headaches when handled.

Not only that, but as all qualities of Ammite remain at the same high standard in the heat of summer as well as during the cold of the winter, the manufacturers recommend Ammite as an all-year-round explosive—an explosive that may be kept in proper storage indefinitely without harming its strength, sensitiveness and stability in the least.

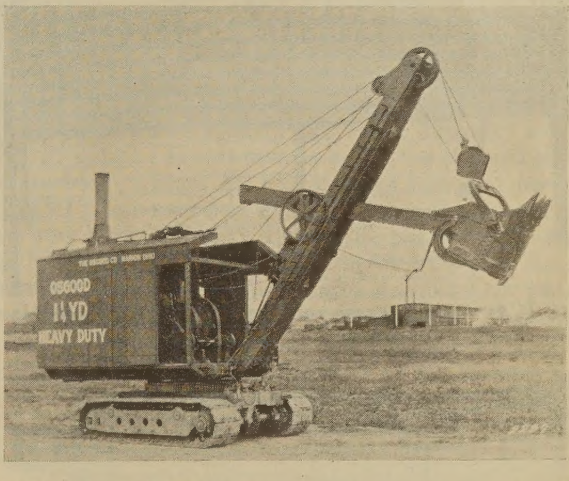
Ammite is graded as to its percentage strength in the same manner that the various forms of dynamite are graded. It is made in six grades—75%, 60%, 50%, 40%, 35% and 30%—sufficient to meet practically every requirement encountered in any kind of blasting, be it mine, quarry, clay pit or construction work, either above or below ground.

New Heavy Duty Shovel

The Osgood Co., Marion, Ohio, manufacturers of steam shovels, has added another unit to its line of revolving steam shovels in the new 1¼-yd. heavy duty shovel which is now ready for the market.

The 1¼-yd. Heavy Duty is of the full revolving type and has incorporated in its construction the standard Osgood features of proved merit, such as horizontal hoisting engines; submerged tube type vertical boiler; centering gudgeon for connecting main body casting to path gear; simplified continuous tread mounting; power steering on both continuous tread and traction mounting; double geared shipper shaft; automatic trip rope tension, etc.

The objective in designing the machine has been to produce a revolving steam shovel of the 1¼-yd. class suitable for the heavy work that it will be called upon to do without in any way sacrificing its speed, simplicity or ease of operation. In general design the machine is modeled after the Osgood ¾-yd. heavy duty machine which has proved so popular in the construction field.



Osgood Heavy Duty Shovel

All of the lime kilns in Northern Alabama are reported as operating full time, and have more orders than they are able to fill. Lime is shipped from these kilns to all sections of the Southeast.

New Automatic Starters for Synchronous Motors

Automatic control of the starting of synchronous type motors is making possible the use of this type of motor to a greater extent, because the manual starting is apparently a complicated procedure which takes considerable time and effort on the part of the attendant.

The accompanying illustrations show some recent types of automatic starting panels designed by the Cutler-Hammer Mfg. Co. of Milwaukee. By the use of these controllers, the starting of a synchronous motor is as simple as for any other type—a push button station being the only part of the apparatus which the attendant need operate. The one illustration shows such a panel for use with a 440 volt motor. The other is a rear view of a panel for use in connection with a high tension synchronous motor.

Most all modern synchronous motors are supplied with squirrel cage windings for starting purposes, and in addition to shifting the connections from the low voltage to the high voltage transformer taps, it is necessary to connect the field winding of the motor to the D. C. Exciter at the proper time.

Synchronous motors are usually of a size which requires a starting compensator of greater capacity than the average manual size, and are in many cases wound for high voltages. For these reasons also automatic control with magnetic contactors is preferable. Oil switches are used, one for connecting the motor to the starting transformer, and another to connect the motor to the line. After the motor is up to speed and the field switch closed—the starting switch must be opened and running switch closed. If these operations are not carried out properly, various troubles arise, such as high peak currents, breaking down of the insulator—which makes the automatic starter with its simple push button control so attractive.

With some installations a magnetic clutch is used between motor and driven machine which remains disengaged during the period that the motor is getting up to speed and synchronizing.

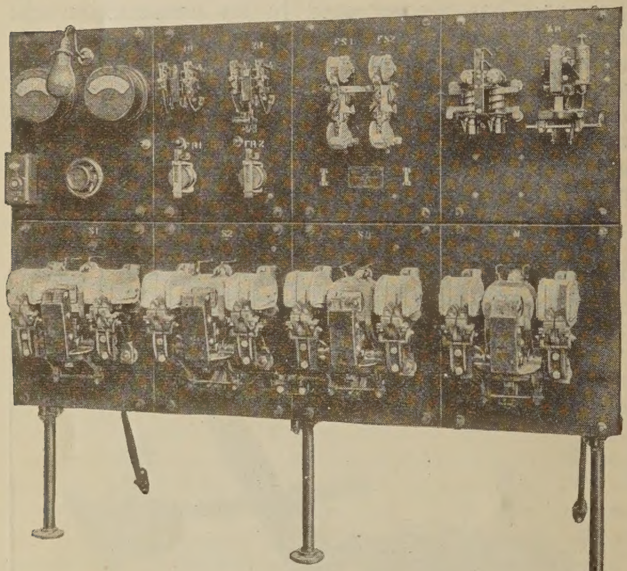


Fig. 1—C-H Auto Starter for Use with Synchronous Motor on Low Tension Line

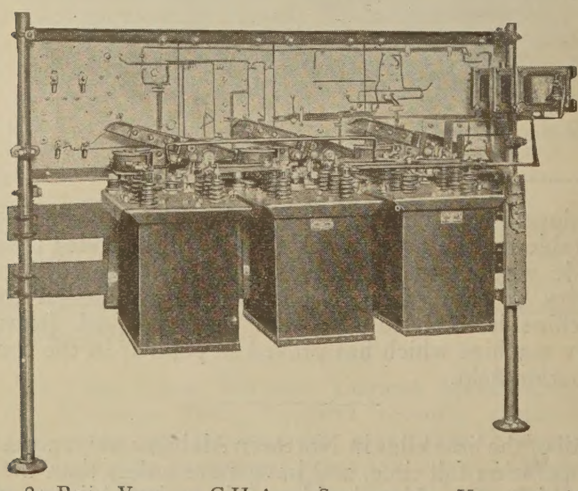


Fig. 2—Rear View of C-H Auto Starter for Use with Synchronous Motor on Low Tension Line

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German Lime in 1922

Consul Orsen N. Nielsen, Berlin

Lime production in Germany in 1922, according to the statistics of the German Lime Association (Deutscher Kalkbund), totaled 4,354,000 tons—an increase of 306,000 tons, or 7.5%, over that of 1921. Domestic demand was brisk throughout the year, while foreign business was dull with only unimportant sales to the Netherlands, Denmark, and Czechoslovakia.

Consumption of lime in the following industries in 1922 increased, as compared with 1921, by the following amounts: building, 176,890 tons, or 10.5%; chemical, 56,587 tons, or 22%; lime fertilizers, 2%; iron and steel, 119,322 tons, or 14%.

German sales of burnt lime for agricultural purposes in 1922 amounted to 124,676 tons, or 19% less than in 1921. The sugar industry in 1922 took 977 tons, or 11% less than in 1921.

The following table gives statistics for the German consumption and exports of lime in 1922:

German Consumption and Exports of Lime in 1922.

	Burnt lime	Sinter dolomite	Marl	Crude lime (ground)	Crude lime-stone
Consumption:	Tons	Tons	Tons	Tons	Tons
Building trade	1,867,628	....	....	....	249,421
Iron and steel	996,137	154,919	....	....	1,766,837
Agriculture	544,543	....	656,618	56,559	....
Fertilizer (cyanamid) factories	239,045	....	30	....	....
Chemical industry[1]	315,142	....	....	....	123,038
Sugar factories	7,568	....	....	....	198,300
Calcareous sandstone factories	197,082	....	....	....	5,234
Alluvial stone manufacturers	126,524	....	224	....	....
Other consumers	11,073	752	21,621	51,772	46,758
Exports	29,668	11,336	2,500	2,836	769
Total	4,334,410	167,007	680,993	111,167	2,390,357

[1] Excluding lime-fertilizer factories.

—*Commerce Reports*

The Penn Metal Co. has purchased the New England steel rod and bar business of the Midvale-Cambria Co., including all machinery, tools and merchandise. The Boston plant of the Midvale company will be operated by the Penn Metal Co. until such time as the Penn Metal Co.'s new bar and rod plant is completed.

The list of steel shapes fabricated includes plain and deformed bars, plain rounds, rods, angles, cold drawn steel, spirals for concrete columns. This gives the Penn Metal Co. the largest and most complete plant in New England for this kind of work.